THE EFFECT OF AN ANIMAL-ASSISTED VISITATION PROGRAMME ON CHILDREN WITH INTELLECTUAL DISABILITIES: A RANDOMISED CONTROLLED STUDY

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DECLARATION

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ABSTRACT

Intellectual disability is a developmental disorder which affects intellectual and adaptive functioning within a social, practical and conceptual domain. This is a lifelong disorder for which no cure exists. Intellectual disability is normally caused by trauma or genetic predispositions. In South Africa this disorder affects approximately 0.64 per 1000 to 29.1 per 1000 children. There are many treatment plans which are used for intellectual disabilities. Animal-assisted intervention is one such plan. With animal-assisted intervention (AAI) certified animals and their owners go to facilities such as hospitals and schools where patients or residents get the opportunity to interact with the animals under the owners' supervision. AAI has been proven to help reduce anxiety and pain and to encourage self-esteem and motivation in children.

The aim of the current study was to empirically study the effect of an AAI on the behaviour of children with intellectual disabilities. The present study made use of a randomised pretest-posttest control group design.

The sample of the current study consisted of 47 children enrolled at a primary school for children with special needs in Cape Town, South Africa. The children were randomly assigned to an experimental group (n = 23) and a control group (n = 24). The experimental group was subjected to a 10-week intervention programme during which four registered dogs from Pets as Therapy visited the children once a week for 40 minutes. The experimental group had the opportunity to talk to, brush, give snacks and pet the dogs. During this time the control group continued with normal everyday school activities.

Two questionnaires, namely the Child Behaviour Checklist (teacher's form) and the Measurement of Pet Inventory (MOPI) were handed to the teachers to complete for all 47 children before (pretest) and after (posttest) the intervention. A p-value of .05 or smaller was

used to indicate the significance of the results. Non-significant results were found on the Child Behaviour Checklist (teacher's form) and the MOPI in the current study. However, the current study recommends that future studies continue to empirically study the effect that AAI can have on children with ID and various other disabilities.

Keywords: Animal-assisted intervention, Intellectual Disability, Behaviour, Attention span, Communication, Rule-breaking behaviour, Compliance

OPSOMMING

Intellektuele gestremdheid is ’n ontwikkelingsversteuring wat ’n persoon se intellektuele en adaptiewe funksionering binne sosiale, praktiese en konseptuele domein affekteer. Dit is ’n lewenslange versteuring waarvoor daar tans geen genesing bestaan nie. Intellektuele gestremdheid ontstaan gewoonlik as gevolg van trauma of as gevolg van ’n genetiese afwyking. In Suid-Afrika affekteer hierdie versteuring ongeveer 0.64 per 1000 tot 29.1 per 1000 kinders. Tans is daar verskeie behandelingsplanne, onder meer troeteldier-ondersteunende intervensie. Troeteldier-ondersteunende intervensie (TOI) is ’n intervensie waartydens gesertifiseerde diere en hul eienaars na instellings soos hospitale en skole gaan waar die pasiënte of inwoners die geleentheid kry om interaksie met die diere te kan hê onder die toesig hul eienaars. TOI het al gehelp met die vermindering van kinders se angs en pyn, en het selfs kinders se selfbeeld en motivering verbeter.

Die doel van die huidige studie was om empiries die effek van ’n TOI op die gedrag van kinders met intellektuele gestremdheid te bestudeer. Die huidige studie het gebruik gemaak van ’n ewekansige voortoets-natoets kontrolegroepontwerp.

Die steekproef van die huidige studie het bestaan uit 47 kinders wat tans ingeskryf is by ’n primêre skool vir kinders met spesiale behoeftes in Kaapstad, Suid-Afrika. Hierdie kinders is lukraak toegewys aan ’n eksperimentele groep (n = 23) en kontrolegroep (n = 24). Die eksperimentele groep is aan ’n 10 weke lange intervensieprogram onderwerp waartydens vier geregistreerde honde van Pets as Therapy die kinders een keer per week vir 40 minute lank besoek het. Die eksperimentele groep het die geleentheid gehad om met die honde te gesels, hulle te borsel, te vertroetel en vir hulle peuselhappies te gee. Gedurende hierdie tyd het die kontrolegroep voortgegaan met hul daaglikse skoolaktiwiteite.

Twee vraelyste, naamlik die Child Behaviour Checklist (onderwysersvorm) en die Meting van troeteldierintervensie (MVTI) is voor die intervensie (voortoets) asook na die intervensie (natoets) uitgedeel aan die onderwysers om te voltooi vir al 47 kinders. Die p-waarde van .05 of kleiner is gebruik om beduidende verskille in die resultate te toon. Niebeduidende verskille is gevind met die Child Behaviour Checklist (onderwysersvorm) asook met die MVTI. Die huidige studie beveel aan dat toekomstige studies voortgaan om die effek wat TOI kan hê op kinders met intellektuele en ander gestremdhede empiries te bestudeer.

Trefwoorde: Troeteldier-ondersteunde intervensie, intellektuele gestremdheid, gedrag, aandagspan, kommunikasie, reël-brekende gedrag, inskiklikheid

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LIST OF ABBREVIATIONS

AAA: Animal-assisted activities

AAI: Animal-assisted intervention

AAT: Animal-assisted therapy

AB: Aggressive behaviour

ADHD: Attention Deficit Hyperactivity Disorder

AP: Attention problems

APA: American Psychiatric Association

AS: Attention span

ASD: Autism Spectrum Disorder

BPD: Borderline Personality Disorder

CBCL: Child Behaviour Checklist

CBT: Cognitive Behavioural Therapy

CM: Communication

CP: Compliance

DSM-IV-TR: Diagnostic and Statistical Manual, Fourth Edition, Text Revision

DSM-V: Diagnositic and Statistical Manual, Fifth Edition

ECT: Electroconvulsive therapy

FAS: Foetal Alcohol Syndrome

FCT: Functional communication training

HAI: Human-animal interaction

HIV: Human Immunodeficiency Virus

ID: Intellectual disability

IEDP: Independent Education and Development Programme

IQ: Intelligence quotient

MOPI: Measurement of Pet Intervention

NCR: Non-contingent reinforcement

PAT: Pets as Therapy

PM: Physical movement

RB: Rule-breaking behaviour

SD: Standard deviation

SIB: Self-injurious behaviour

SNAP: Special Needs Adapted Program

SP: Social problems

SPSS: Statistical Package for Social Sciences

SSRI: Selective Serotonin reuptake inhibitors

THR: Therapeutic horseback riding

TOP dogs: Touch our Pets Therapy Dogs

WCED: Western Cape Education Department

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Animal-assisted interventions (AAI) have shown great results assisting with the well-being of children and adults over the years (Kesner & Pritzker, 2008; Walsh, 2009). Previous studies indicate that animal interaction has the ability to not only reduce stress and anxiety, but also to foster a sense of happiness and confidence and to encourage a better sense of responsibility (Kesner & Pritzker, 2008; Walsh, 2009). Wells (2011) noted that animals help individuals enhance their health, serve as a vehicle to become a better person and facilitate individuals with hearing and visual disabilities. AAI has also shown great results with disabled children, including improvement in communication, social interaction and behaviour (Adams, 2009; Bass, Duchowny & Llabre, 2009).

Even though the benefits of AAI are well known, the interaction between humans and animals dates back many years. These interactions and activities were not necessarily known to be AAI but rather markings of the relationship that humans and animals had with each other over the years.

1.2 A BRIEF HISTORY OF HUMAN-ANIMAL INTERACTION

It was only between the 1960s and 1980s that the different health and other benefits of animal companionship for humans were first documented scientifically (Johnson, Odendaal & Meadows, 2002; Serpell, 2010). However, the history of animal assistance and companionship spans centuries (Serpell, 2010). As early as 30 000 years ago images of animals appeared in art (Slabbert, 2010). In the pre-classical period Egyptians were known for their images showing their gods with animal heads (Serpell, 2010). Egyptians believed

that a canine god called Anubis was a god of the dead. This god was in charge of taking souls to where their fate would lie in the afterlife (Slabbert, 2010). Anubis was well known for being represented as a jackal or dog head (Slabbert, 2010).

From this, other mythologies also believed in dogs as a symbol of death. Greek and Roman mythology believed there was a three-headed hound which stood at the gates of Hades (Slabbert, 2010). The Hindu god Shiva, known for having significant destructive and creative powers, was also portrayed as a black dog (Slabbert, 2010). Greek gods often also had the ability to transform themselves into animals to disguise their true identities or forms (Serpell, 2010). Even though the significance of animals, especially dogs, had negative connotations and associations with death during the pre-classical period, as time passed new views came about.

The importance of animals extended into the medieval and Renaissance periods, when images of and literature on animals that were present during times of illness, and seen as a catalyst for cure appeared (Serpell, 2010; Slabbert, 2010). The literature indicates that dogs were often used for licking the ill, as it was believed that dogs had the ability to cure illness (Serpell, 2010; Slabbert, 2010). During the age of enlightenment (the period spanning the 1700s), the relationship between animals and children started to emerge (Serpell, 2010). Throughout the 1800s it became clearer that animals and their relationship with humans can be greatly beneficial to humans, including the mentally ill (Morrison, 2007; Serpell, 2010).

Following the 1800s, the medical world had been concerned about the health of the public and other diseases associated with animals (Serpell, 2010). The only other references to animals in medical and psychological advances were that of psychoanalytic theories which attempted to explain the origins of mental illness (Serpell, 2010). During this period Sigmund Freud discussed the meaning of animals in his clients' dreams (Serpell, 2010).

In the past 20 years the theories about animals and all their relations started to shift towards that of being therapeutic catalysts for people rather than associations and ideas of being spiritual beings (Serpell, 2010). It was during these 20 years that therapy with animals became a novelty and AAI became more widely used (Serpell, 2010). Some psychological disorders such as autism and other developmental disorders, including intellectual disabilities, have shown some improvement with AAI (Adams, 2009; Martin & Farum, 2002; Surujlal & Rufus, 2011).

1.3 INTELLECTUAL DISABILITIES

Intellectual disability (known in the ICD-11 as intellectual developmental disorder or ID) as listed in the Diagnostic and Statistical Manual Fifth Edition (DSM-V) is characterised by mental deficits and difficulty with everyday functioning (APA, 2013). These mental deficits can be caused by either trauma to the head or genetic predispositions (APA, 2013). Those suffering from intellectual disabilities will have difficulty with everyday functioning in the "conceptual, social and practical domains" of their lives (APA, 2013, p. 33).

In other words, they will experience difficulty with mastering academic tasks that are equivalent to academic tasks mastered by others their age, interacting and communicating with others, and eating or dressing (APA, 2013). The DSM-V defines ID as a neurodevelopmental disorder, the full diagnostic criteria for intellectual disabilities can be found in Addendum A.

1.3.1 Prevalence of intellectual disabilities

In the general population ID are found to affect approximately 1% of people worldwide (APA, 2013). Six out of every 1000 people have severe intellectual disabilities (APA, 2013). Between 30% and 50% of children and adolescents suffering from ID also have a co-morbid mental disorder (Einfeld, Ellis & Emerson, 2011). This is in accordance with Sadock and

Sadock (2007) who noted that 40.7% of children between the ages of 8 and 18 years with ID will have at least one psychiatric disorder as well. Common co-morbid diagnoses include impulse control disorders and autism (APA, 2013).

The United States National Health Interview Surveys revealed that over 12 years (1997-2008), boys had a higher prevalence of attention deficit hyperactivity disorder, cerebral palsy, intellectual disability, autism, stuttering or stammering, seizures and other developmental disabilities than girls (Boyle et al., 2011). The overall prevalence of any developmental disability in both boys and girls increased from 12.84% to 15.04% (Boyle et al., 2011).

In 2001 a South African national survey found that the prevalence of ID was 0.5%, whereas in 1999 it was found to be 1.1% of the population (Adnams, 2010). Approximately 35.6 per 1000 children suffered from ID in a rural community in the Northern Cape Province of South Africa (Christianson et al., 2002). This indicates that there are possibly similar, larger groups of ID in smaller communities across the country. Those with mild ID are estimated at 0.64 per 1000 and severe ID at 29.1 per 1000 children (Christianson et al., 2002). According to the local sensus of 2011, 7.5% of the general population suffered from disabiliites (Statistics South Africa, 2014). Of those individuals, 4.1% were between 10 and 14 years old (Statistics South Africa, 2014). Less than 1% of the total population of people with disabilities had communication difficulties. Mild difficulty in concentration and memory accounted for 3.2% of the individuals and 1% had severe difficulty with concentration and memory (Statistics South Africa, 2014). Unfortunately a standardised tool for measuring the population prevalence of disability, including intellectual disability, is not yet available in South Africa (Nel & Grosser, 2016). The current prevalence of intellectual disability in South Africa is therefore calculated by comparing various data collected from 2001 to 2011 (Nel & Grosser, 2016).

1.3.2 Aetiology of intellectual disabilities

The onset of ID can vary in cause from genetic predisposition to trauma to the brain. When ID is due to a genetic predisposition, the individual will show physical characteristics of identifiers with delayed development (APA, 2013). Common genetic syndromes are Down's syndrome and Lesch-Nyhan syndrome (APA, 2013).

Other causes of intellectual disabilities include trauma to the brain, such as meningitis or encephalitis, and severe traumatic brain injuries (APA, 2013). Intellectual disability is not a progressive disease, but in some cases like Rett syndrome and San Phillippo syndrome ID can worsen over time (APA, 2013). In most cases, however, ID worsens due to an underlying medical reason such as hearing, visual or other impairments, for example epilepsy (APA, 2013).

1.4 INTELLECTUAL DISABILITIES AND ANIMAL-ASSISTED INTERVENTIONS

AAI can provide a variety of benefits, including improvements within sensory, muscular, social and educational areas (Granados & Agis, 2011). Improvements have been found in the self-esteem, confidence levels as well as social engagement of children enrolled in animal-assisted activities (Surujlal & Rufus, 2011). Adults with ID have shown more awareness of their environment, an increase in self-esteem as well as an increase in their confidence levels (Borioni et al., 2012).

Themes of improved self-confidence, self-esteem, empathy, better sense of mastery of activities and better social engagement have also been found in children with behavioural, emotional and personal difficulties (Adams, 2009; Burgon, 2011). Overall it has been established that with the help of AAI children and adults with intellectual and other disabilities will improve vastly in self-esteem, confidence and social engagement. However, studies on

ID in children, specifically in relation to animal-assistance, are rare and further investigation is needed (Smith-Osborne & Selby, 2010).

1.5 RESEARCH RATIONALE

Having individuals take part in meaningful but failure-free activities will reduce stress, encourage good behaviour, help with accomplishing a better sense of well-being or accomplishment and improve mood (Dodd, 2010). AAIs have proven over and over that they can easily increase better mood, reduce stress and help with better well-being (Adams, 2009; Kesner & Pritzker, 2008; Walsh, 2009). Research has further indicated that animal-assisted interventions with individuals suffering from a disability have shown great benefits in different areas of development (Borioni et al., 2012; Surujlal & Rufus, 2011).

However, research within this field must also make use of control groups, bigger sample groups and more quantitative studies in general (Heimlich, 2001; Smith-Osborne & Selby, 2010). Smith-Osborne and Selby (2010) suggested that more studies should focus on broader populations and vulnerable groups such as children with different disabilities.

Furthermore, studies have indicated the limitations of having AAI studies within a South African context (Lubbe & Scholtz, 2013). Together with the methodological differences and weaknesses of prior studies, the current study aims at making use of more sound methodological procedures and adding to research within a South African context.

Heimlich (2001) noted the importance of taking into account the health of the animal, as studies often forget the fatigue and distress AAI can cause the animal. Therefore, it is important to consider using more than one animal on visitations to minimise the distress of too many people around one animal and also to limit the time of the interaction (Heimlich, 2001).The current study therefore made provision to use more than one owner-and-dog team and to carefully consider the interaction time the dog had with the children.

1.6 RESEARCH QUESTION

Will an animal-assisted intervention programme have an effect on the behaviour of children with intellectual disabilities? Behaviour includes attention span, physical movement, communication, compliance and social skills.

1.7 AIMS AND OBJECTIVES

It was the aim of the current study to determine the effect of an AAI on the behaviour of 10 to 12 year old children with intellectual disabilities at a special needs school in Kuils River, Cape Town. The study aimed to find whether an AAI would bring change to the children's behaviour as observed by the teachers. The study made use of a control group and an experimental group together with pretests and posttests that aided in evaluating the effect the intervention itself has had, in essence making the study methodologically sound. The study aimed at further proving the effectiveness of animal interaction on the behaviour of children with ID. More so, it was the aim of the current study to extend the knowledge and research on animal-assisted interventions in a South African context.

1.8 HYPOTHESES

- There will be a significant difference in **attention span** between children in the experimental and control group after a 10-week visitation programme.
- There will be a significant difference in **physical movement** between children in the experimental and control group after a 10-week visitation programme.
- There will be a significant difference in **communication** between children in the experimental and control group after a 10-week visitation programme
- There will be a significant difference in **compliance** between children in the experimental and control group after a 10-week visitation programme.

- There will be a significant difference in **social skills** between children in the experimental and control group after a 10-week visitation programme.
- There will be a significant difference in **behavioural problems** between children in the experimental and control group after a 10-week visitation programme

1.9 DEFINITIONS

1.9.1 Animal-assisted intervention (AAI)

An AAI can be defined as an intervention that purposefully makes use of or includes animals as part of an ameliorative process or milieu (Kruger & Serpel, 2010). Animal-assisted interventions, taking part or the act of intervening by including animals with the aim of influencing people's lives can be seen as AAI (Kruger & Serpel, 2010). AAI is inclusive of various animal-facilitated programmes and seen as a general term for activities which include animals as facilitators (Kruger & Serpel, 2010). This includes animal-assisted therapy (AAT) and animal-assisted activities (AAA).

1.9.2 Animal-assisted therapy (AAT)

Animal-assisted therapy (AAT) can be defined as the process during which an animal is present in a therapy or counselling session and used in a structured and goal-oriented therapeutic manner (Kruger & Serpel, 2010). Therefore, the intervention must be undertaken by a professional such as a psychologist who is practising the therapy within his or her scope of practice (Kruger & Serpel, 2010). A professional in this sense would be someone who has been trained in animal interventions specifically (Kruger & Serpel, 2010).

1.9.3 Animal-assisted activities

Animal-assisted activities (AAA) are used in a similar manner except here they are used in a variety of activity programmes which act as catalysts in different situations (Berry, Borgi,

Francia, Alleva & Francesca, 2013). Therefore, it can be seen as informal meet-and-greet activities.

1.9.4 Intellectual disabilities

An intellectual disability is characterised by deficits in everyday functioning and impairment in general mental abilities (APA, 2013). Daily impairments will be evident in comparing people with IDs with their "age, gender and socioculturally matched peers" (APA, 2013, p. 37). For purposes of the current study the participants would need to be primarily diagnosed with ID according to the DSM-V criteria (Addendum A).

1.10 OUTLINE OF THE THESIS

Chapter 1 Introduction

The chapter briefly discussed the history of human-animal interactions, as well as a basic outline of intellectual disabilities followed by the objectives of the current study.

Chapter 2 Theoretical framework

The chapter discusses the theories under which the current study had made its assumptions following the results. This chapter forms a framework or paradigm from which the results are understood.

Chapter 3 Literature review

The chapter elaborates on current and previous research in the field of human-animal interactions in both therapeutic and casual interactions which had proven to be successful. It further encompasses the variety of settings in which animal-assisted activities have been done. The literature review further explains a more in-depth view of intellectual disabilities and how it could be treated.

Chapter 4 Methodology

The chapter extensively explains the research methods which were used throughout the current study to reach the results. This chapter includes the design, procedures, sample, and the instruments which the current study made use of.

Chapter 5 Results

Chapter 5 discusses the results which were found following the execution of the data collection. The statistical results are explained in order to define whether or not the current study had found significant changes in the behaviour of children suffering from intellectual disabilities.

Chapter 6 Discussion

The chapter elaborates on the findings of the current study whilst explaining whether or not the study had found statistically significant changes in the behaviour of children suffering from ID, or not. It further makes use of the theoretical framework to find reason and meaning for the current results. This chapter also makes recommendations for future studies within the field of AAI, considers the limitations and makes conclusions regarding the current study.

1.11 SUMMARY

In the current chapter a brief history of human animal interaction, the definition of intellectual disability as well as prevalence and aetiology of intellectual disabilities were discussed. The chapter went further to describe the rationale, research question, aims and hypotheses of the current study. The next chapter will discuss the theoretical frameworks used to explain human-animal interaction.

CHAPTER 2

THEORETICAL FRAMEWORK

The current study makes use of two paradigms for understanding the effect of AAI on children in this age group (10- to 12-year-olds). It has been noted that there is not one specific theory which fully explains AAI (Kruger & Serpel, 2010). The biophilia hypothesis (Huelat, 2008) and Erikson's psychological stages of development (Sadock & Sadock, 2007) will be discussed below.

2.1 BIOPHILIA

Biophilia as defined by Huelat (2008, p. 1) is "a love for the living world". Biophilia notes that we have a love for nature and this love for nature holds many health benefits such as lowering blood pressure, boosting energy and lowering stress (Huelat, 2008). Nature in this case is inclusive of animals, plants and biochemistry (Huelat, 2008; Krcmarova, 2009).

The biophilia hypothesis as described by Wilson in the 1980s noted that the phenomenon of being close to nature is part of human evolution and therefore aligning ourselves with animals and seeing the value of having other species close to us is natural (Kahn, 1997; Krcmarova, 2009). Wilson further believed that if one was to lose contact with other species, the human mind will suffer from psychic deprivation (Krcmarova, 2009). Being close to animals or other species is thus seen as innately human, according to Wilson (Krcmarova, 2009).

Wilson believed that biophilia is a tendency which will never be lost and can be carried over from generation to generation, evolving in what is seen as a gene-culture coevolution (Gullone, 2010; Kellert & Wilson, 1993). This phenomenon is seen to be culturally diverse as Wilson believed that the innate need to have contact with other organisms can simply

change in form due to different cultures (Krcmarova, 2009). Over the years biophilia in its form has changed but in principle stayed the same. Gullone (2010) explains it as follows: a "process through which biophilia evolved has been proposed to be biocultural one during which hereditary learning principles have elaborated upon culture while the genes which prescribed the biophilic propensities spread by natural selection in a cultural context" (p. 295).

In modern society biophilia can be explained as humans' natural reaction to have contact with nature through visiting nature reserves and parks, taking walks on the beach or the need to go on holiday (Gullone, 2010). Biophilia is also experienced in the need for humans to visit and view other species (Gullone, 2010). This is particularly applicable to the South African context where we have many parks and reserves which facilitate safaris and encounters with nature and different species.

This principle can therefore be summarised as follows: the biophilia hypothesis is seen as an innate tendency to affiliate the self with other animals and beings. This innate ability or affiliation is thus genetic and will continue to stay within the human make-up, as it has for centuries (Kellert & Wilson, 1993). The ability to distinguish and have common knowledge about animals and their characteristics can therefore be seen as an innate feeling, a natural tendency through generations of learning and accepting principles of animals without having extended exposure to them.

2.2 ERIKSON'S PSYCHOLOGICAL STAGES OF DEVELOPMENT

Erik Erikson, a psychoanalyst, was born in 1902 and died in 1994. He was well known for his contribution to childhood development (Sadock & Sadock, 2007). Much of Erikson's theory was based on the epigenetic principle (Sadock & Sadock, 2007). According to Erikson, development happens in a sequel, where one stage must be completed or resolved before the next stage can occur (Sadock & Sadock, 2007). Erikson believed that the basis of

human behaviour is social and is thus reflected in one's desire to affiliate with other individuals (Santrock, 2009).

Erikson described eight **developmental stages** in life, namely early infancy: basic trust versus mistrust; later infancy: autonomy versus shame; early childhood: initiative versus guilt; middle childhood: industry versus inferiority; puberty and adolescence: identity versus role confusion; young adulthood: intimacy versus isolation; mature adulthood: generativity versus stagnation; and lastly, late adulthood: integrity versus despair (Colman, 2009; Sadock & Sadock, 2007). These stages vary in their functioning and purposes, regarding language and communication skills, cognitive and behavioural functioning, healthcare and maintenance behaviour as well as understanding of illness (Morrison & Bennett, 2009).

During each stage the person will achieve a virtue which forms part of the successful accomplishment of the developmental stage (Sadock & Sadock, 2007). For the purposes of the current study Erickson's industry versus inferiority stage (occurring between ages 5 and 13) will be used (Sadock & Sadock, 2007). During this stage it is important for the child to learn and accomplish competency in mastering knowledge and intellectual skills (Eccles, 1999; Sadock & Sadock, 2007; Santrock, 2009). Competency will thus be achieved if the child is able to receive an instruction and complete the instruction with diligence and to the best of his or her ability (Sadock & Sadock, 2007). Then follows identity versus role confusion when the identity starts to develop and new social behaviours are built as well as new variations in behaviour are defined (Sadock & Sadock, 2007). It is assumed that due to the children's disabilities they already feel a sense of inferiority in their development. Therefore, if a child (between the ages of 5 and 13 years) who has an ID is unable to complete a task, one can derive that competency will not be reached. Consequently the child will suffer from an identity crisis (Colman, 2009).

During this period the child will constantly attempt to master a variety of school tasks while learning new social skills and developing a sense of self-esteem and confidence when all these tasks are mastered (Eccles, 1999). However, when they fail at mastering these tasks they easily experience aggression, social isolation, depression, anger and frustration (Eccles, 1999). They are then at further risk for long-term behavioural, academic and psychiatric difficulties (Eccles, 1999).Common characteristics of ID include deficits in social, practical and conceptual domains. When applied to the psychosocial developmental theory, one can say that in essence children with ID will struggle to reach their synthesis as they will not be able to achieve their basic behavioural motivation. If, according to Erikson, humans' basic behavioural motivation is social affiliation, a disorder such as ID and autism will intrude on the child's ability to develop.

It is perhaps important to note that Erikson himself had left his home country and travelled to the United States of America, where he experienced different cultures, people and where he felt like an outsider himself (Douvan, 1997). With this background, Erikson's theory tried to keep in mind the complexity of different cultures in the development of the self as different cultures can influence social behaviour (Atalay, 2007).

Independence is often the core of the synthesis of Erikson's developmental stages. However, independence in itself is a westernised concept which often denies different cultures. According to Atalay (2007), this suggests that westernised cultures would be more susceptible to developmental crises when they fail to resolve their developmental stage. ID as a diagnosis can be regarded as a westernised concept, but the current study has to consider the importance of different cultures and beliefs. Even though ID and competence are seen as culturally biased terms, the current study will use this as an overall theory to suggest that all the participants will have the need to achieve competence regardless of culture. It is important to take into account that biophilia is not seen as cultural bias.

Therefore, even if Erikson's developmental theory does not apply to the needs of the participants, by simply having interaction with an animal will show improvement in other areas.

2.3 SUMMARY

In summary, the theory of biophilia suggests that all humans have the need to affiliate themselves with nature and other natural organisms in general. This innate process is seen as something which culture and genes have evolved with over the years. Erik Erikson on the other hand believed that each person has different stages through which development takes place and when synthesis is not reached in each of the different stages the person will stagnate.

If the theory of biophilla is to be applied to Erikson's developmental stages, it is hypothesised that this natural affiliation with another species can help overcome some of the challenges associated with the inability to overcome the developmental crises. The next chapter will discuss an overview of literature.

CHAPTER 3

LITERATURE REVIEW

The field of AAI has shown great results over the years (Adams, 2009, Granados & Agis, 2011; Jenkins, 1986; Kesner & Pitkzer, 2008; Wells, 2011). The chapter will discuss both the benefits of AAI with regards to different disabilities and more specifically give an in-depth description of ID. It further discusses how ID and other disabilities will relate to AAI in general.

3.1 INTELLECTUAL DISABILITY (ID)

Although defined as a disorder on its own, characterised by deficits in intellectual and adaptive functioning, ID is also found to be co-morbid with other disorders and medical diagnoses (APA, 2013).

3.1.1 ID diagnosis and features

Even though the DSM-V categorises ID as a neurodevelopmental disorder, the DSM-IV-TR previously described it as a developmental disorder named mental retardation (Barlow & Durand, 2009).

Intellectual disability is thus a developmental deficit which causes severe difficulty in cognitive and behavioural capabilities in a person (Sadock & Sadock, 2007). Previously a diagnosis was made through assessing the social adaptation and intelligence quotient (IQ) of a person (Sadock & Sadock, 2007). According to the DSM-V assessment of adaptive functioning and intellectual functioning through clinical testing is more important for diagnosis (APA, 2013). It is vital to ensure that the testing of intellectual functioning is psychometrically valid, culturally appropriate, comprehensive and individually administrated (APA, 2013).

Further, scores can still be affected depending on communication, language, sensory functioning and sociocultural background (APA, 2013).

According to the DSM-V there are three important criteria which need to be met for the diagnosis of ID. Firstly, “deficits in intellectual functions, such as reasoning, problem solving, planning, abstract thinking, judgement, academic learning, and learning from experience, confirmed by both clinical assessment and individualised intelligence testing” (APA, 2013, p.33).

Secondly, the person will experience deficits in adaptive functioning which in effect will “result in failure to meet developmental and sociocultural standards for personal independence and social responsibility” (APA, 2013, p.33). Daily activities such as communication, work, school, independent living and social participation will become difficult without constant support (APA, 2013). Thirdly, the onset of these deficits will be during the developmental period, which means that essentially the deficits will become apparent during childhood or adolescence (APA, 2013).

The severity of ID can further be measured on a scale of mild to moderate, severe and profound symptoms within conceptual social and practical domains of functioning (APA, 2013; Sadock & Sadock, 2007).

3.1.2 Level of severity

Mild ID is seen when there is some difficulty with conceptual skills in school and academic, abstract and executive planning (APA, 2013). Social problems will typically be noted in perceiving social cues, understanding emotion and communicating effectively with peers (Sadock & Sadock, 2007). Mild practical functionality implies difficulty with grocery shopping in adulthood and required support in daily complex tasks as a child (APA, 2013).

Moderate ID indicates more difficulty at a younger age specifically relating to social and communication skills (Sadock & Sadock, 2007). At this level of severity it is more important to provide support and individually focused attention to school and other daily tasks (APA, 2013; Sadock & Sadock, 2007). At a severe level of ID the symptoms become more visible. The child will have significant difficulty with spoken language and completion of school tasks is noticeably difficult (Sadock & Sadock, 2007). At this level of severity it is vital that the individual receives more prominent support in daily living tasks (APA, 2013). However, with continual teaching or behavioural support the individual can learn self-help skills (APA, 2013; Sadock & Sadock, 2007).

Severe ID is noticeable in an individual who has little understanding of both written and spoken language (APA, 2013). The individual will further show little understanding of concepts like numbers, time, money and quantity (APA, 2013). Language will only be understood in simple gestural and speech communication (APA, 2013). Within a practical domain the individual will require a lot of support and supervision at all times for meals, bathing, dressing and other everyday living activities (APA, 2013).

Profound ID is seen when the individual has difficulty with identifying symbolic processes and he or she will be more likely use conceptual skills in the physical world (APA, 2013). Socially the individual will have little to no communication abilities He or she will only be able to communicate through some non-verbal gestures or cues (APA, 2013). In a practical domain the individual will be completely dependent on others for health, safety and physical care (APA, 2013). It is important to note that not all who suffer from a medical illness or a psychological illness will show signs of ID. Intellectual disability is often inclusive of, but not exclusive to, various other disabilities, mental and medical illnesses. It is still listed as an individual diagnosis in the DSM-V. Further, ID is not seen as a degenerative disease, it is difficult to treat and not something which can be healed.

Even though ID is a diagnosis in itself, there are often co-morbid diagnoses. Co-morbid diagnoses include both medical and further psychological diagnoses.

3.1.3 Co-morbid psychological diagnoses

Some of the more commonly noted co-morbid psychological diagnoses include disorders such as: attention-deficit hyperactivity disorder, mood disorders, anxiety disorders, impulse-control disorders, autism spectrum disorder (ASD), stereotypic movement disorder and major neurocognitive disorder (APA, 2013). ID is known to also show symptoms of impulsivity, naivety, substance abuse, violence and other associated conduct difficulties that could suggest the presence of a further diagnosis such as borderline personality disorder (BPD). Symptoms of misconduct and impulsivity have been noted in children and adults suffering from ID or BPD (Emerson, Einfeld & Stancliffe, 2011; Wink, Erickson, Chambers & McDougle, 2010).

BPD by definition is a personality disorder in which the individual has a “pervasive pattern of instability of interpersonal relationships, self-image, and affect, and marked impulsivity that begins by early adulthood and is present in a variety of contexts” (APA, 2013, p. 663). Wink et al. (2010) noted that the possibility of such a co-morbid diagnosis is highly irregular, but has been reported in some individual cases. Individuals diagnosed with intellectual and other developmental disabilities experience much higher rates of interpersonal violence than those in the general population (Akinson & Ward, 2012). Ignorance and naivety are also commonly associated with individuals with ID. As a result many suffer with HIV and substance abuse and they become victims or perpetrators of sexual abuse (Rohleder, Swartz, Schneider & Eide, 2012; Van Straaten et al., 2014). Rohleder et al. (2012) noted the importance of educating learners with disabilities about HIV prevention in a South African population. A diagnosis of BPD would, however, be somewhat impossible to make in a child prior to early adulthood.

Wink et al. (2010) noted that parents of children with ID often find it difficult to validate the experiences of the child, resulting in the possibility of disregarding the needs of the child. Consequently this may possibly contribute to the irregular development of the child's emotions. Those with ID would also then partake in self-harming behaviours – another common symptom of BPD (Wink et al., 2010).

Although children with ID often partake in misdemeanours behaviour, Emerson et al. (2011) found that this is more commonly related to the environment in which the child is raised. They noted that poor living environments such as a low-income household, a deprived neighbourhood and inconsistent or harsh parenting would increase chances of misconduct (Emerson et al., 2011). Therefore it is important to note that the parenting style and level of communication of the parent and adult would largely influence the development of certain behaviours in children with ID.

According to Kiani, Tyrer, Hodgson, Berkin and Bhaumik (2013) previous studies suggested there is a difference in mental health between those living in urban areas and those in rural areas. As mentioned, Christianson et al. (2002) found 35.6 per 1000 children to suffer from ID in a rural area sample in SA. On the other hand, in the United Kingdom it was found that there was no correlation between area of residence and the prevalence of mental illness, but found that ASD is higher in rural areas than urban areas (Kiani et al., 2013).

ID has many co-morbid diagnoses, some of which include ASD and ADHD. Individuals with ID and a co-morbid diagnosis of ADHD have also been found to struggle with symptoms of enuresis, encopresis, anxiety disorders as well as motor and vocal tics (Reilly & Holland 2011). Thus, with co-morbid ID diagnoses there are often a range of other associated symptoms. A co-morbid diagnosis of ID and ASD will show a higher risk for self-injurious behaviour (SIB) (Richman et al., 2013). This relates back to conduct symptoms as these children are likely to partake in risky behaviours which may include criminal, substance and

other self-harming habits. When working with these children it would be vital to take into account the likelihood of their being rebellious and having behavioural problems.

3.1.4 Co-morbid medical diagnoses

The DSM-V indicates that a variety of physical and medical diagnoses can occur co-morbidly with ID. However, Sadock and Sadock (2007) indicated that there are other medical diagnoses which could have a physical representation in ID. These medical diagnoses are known as behavioural phenotypes, which can be defined as “a syndrome of observable behaviours that occur with a greater probability than expected among those individuals with a specific genetic abnormality” (Sadock & Sadock, 2007, p.1141).

Well-known behavioural phenotypes include: Down’s syndrome, Fragile X syndrome, Prader-Wili syndrome, Angelman syndrome, Cornelia de Lange syndrome, Williams syndrome, Cri-du-chat syndrome, Smith-Magnesis syndrome, Rubinstein-Taybi syndrome, Tuberous sclerosis complex one and two, Neurofibromatosis, Lesch-Nyhan syndrome, Galactosemia, Phenylkentonuria, Hurler’s syndrome, Hunter’s syndrome and foetal alcohol syndrome (FAS) (Sadock & Sadock, 2007). These phenotypes often manifest in physical markers which can help one to differentiate between the different disorders (Sadock & Sadock, 2007). ID is not always identified in these medical diagnoses but more often seen as an additional diagnosis to the behavioural phenotype (Sadock & Sadock, 2007).

According to the DSM-V other environmental factors like a dramatic head injury, meningitis or encephalitis may cause ID (APA, 2013). When this is prevalent there is a possibility that a neurocognitive disorder may be diagnosed together with ID (APA, 2013). Further causes include both pre-, peri- and postnatal factors (Barlow & Durand, 2009).

Prenatal factors include infection and environmental conditions such as when the mother drinks too much alcohol, resulting in FAS, or when the foetus suffers from deprivation of

oxygen during the pregnancy, also known as anoxia (Banich & Compton, 2011). With these conditions also comes the possibility of cerebral palsy, a motor disorder which results in damage to neurons responsible for motor control (Banich & Compton, 2011). Cerebral palsy and anoxia does not necessarily mean the individual will have mental deficits such as ID – even though the possibility exists. Perinatal causes of ID include events – any trauma or complication – during labour which could result in neonatal encephalopathy (APA, 2013). Postnatal causes of ID are mostly environmental causes like trauma to the head (traumatic brain injury), infections, seizure disorders and intoxications (APA, 2013). Due to the wide variety of causes associated with ID, the possibility of physical disabilities is also evident with ID. Traumatic brain injury, cerebral palsy and anoxia could all indicate the possibility of being wheelchair bound. ID further could be distinguished in ratio between boys and girls.

3.1.5 Gender and ID

According to the DSM-V, ID has a global general population male to female ratio of 1.2 : 1 for severe ID and an average mild ID ratio of 1.6 : 1 (APA, 2013), which indicates that males are much more likely to suffer from ID than females. This does however vary across different studies which could be due to male vulnerability to brain insult (APA, 2013). Further incidence of ID is influenced by the age of the parents. Interestingly, advanced maternal and paternal age seems to increase the chances of having a child with ID (Sadock & Sadock, 2007). A male to female ratio of 3:2 has been found in South Africa (Christianson et al., 2002). In the Western Cape the majority of diagnoses of pervasive developmental disorder were made for boys with a median age of 42 months (Springer, Van Toorn, Laughton & Kidd, 2013).

Interestingly, Young, Gore and McCarthy (2012) found that the perceptions of staff members would differ depending on the sex of the individual with ID. In a qualitative study it was found that staff members perceive men with ID as more inclined towards sexual tendencies and

motivations as opposed to women with ID, who is seen as being more reserved and innocent in this aspect (Young et al., 2012). John (2012) found that there are also differences in maternal stress when raising either a daughter or a son with ID. He found that mothers experienced more stress if they have a daughter with ID versus when having a son with ID (John, 2012). Mothers being unable to receive therapeutic care for their daughters could be a possible reason for these differences. Furthermore, the study indicated that girls with ID are more likely to experience sexual abuse and violence than boys with ID (John, 2012). These findings coincide with gender stereotypes of men being more inclined toward sexual tendencies than woman, and as Young et al. (2012) noted, women are seen to be more innocent than men, whether suffering from ID or not.

The findings of Young et al. (2012) are inclined towards gender stereotypes which indicate that men are in general seen as more sexual than woman. Their study consisted of seven women and three men, indicating that the men-to-women ratio in the sample was not equal.

No cure exists for ID, however various interventions and therapeutic methods have been deemed somewhat useful in alleviating symptoms.

3.2 ALTERNATIVE INTERVENTIONS/THERAPY

3.2.1 Introduction

Treating ID is seen as an individually tailored process which is based on the individual's educational, social, environmental and psychiatric needs (Dodd, 2010; Sadock & Sadock, 2007). The more common treatments used for ID include training in social skills and communication (Sadock & Sadock, 2007). Pharmacological treatments are more often used when the individual presents with co-morbid medical, physical or psychological diagnoses (Sadock & Sadock, 2007).

3.2.2 Treatment for physical disabilities

Common treatments for physical disabilities involve chiropractic and osteopathic methods or medical treatments such as vitamins, natural products, massages, homeopathy or acupuncture (Majnemer et al., 2013). These treatment methods are normally tailored to the individual's diagnosis and the severity of their disabilities like with any other treatment for diagnoses associated with ID (Sadock & Sadock, 2007). Majnemer et al. (2013) noted however that these methods are complementary and alternative to regular medical treatment for cerebral palsy.

A further study made use of object play and social play to assess mastery behaviours in toddlers with disabilities. They found that through the use of play, children were more attentive in object playing than social playing with their parents involved (Smidt & Cress, 2004). This was attributed to the need for better concentration when playing with objects (Smidt & Cress, 2004). Kodjebacheva (2008) noted that play can be an important tool for children both with and without disabilities as play can encourage social, cognitive and motor skills development. Kodjebacheva (2008) also encouraged what is called boundless playgrounds, which are specifically designed to be more accessible to children who are wheelchair bound and disabled. This would allow for all children to interact and play on common grounds without limiting children who are disabled (Kodjebacheva, 2008). Anderson, Wozencroft and Bedini (2008) found that those participating in disability sports (including sports with wheelchairs) are more likely to have social support than those who do not participate in disability sports.

3.2.3 Treatment for co-morbid psychological diagnoses

Pharmacological approaches have also been used to alleviate co-morbid psychiatric diagnoses associated with ID. Treatment for these co-morbid diagnoses includes antipsychotic medications, mood stabilising medications, anti-anxiety and attention focusing

medications (Sadock & Sadock, 2007). Treatment for co-morbid diagnoses such as autism often involves social skills interventions (Matson, Matson & Rivet, 2007).

Other psychological treatments include therapy such as cognitive behavioural therapy (CBT) (Sadock & Sadock, 2007). CBT has previously been used for the treatment of anxiety disorders as well as depression (Sadock & Sadock, 2007). Shenk and Brown (2007) made use of CBT for the treatment of an adolescent sexual offender who also suffered from ID. They suggest that this may be seen as useful treatment when exposure and response prevention is added for adolescent sexual offenders with ID (Shenk & Brown, 2007).

3.2.3.1 Behavioural difficulties

Behaviours such as increased levels of aggression are also commonly associated with ID. More prominent treatments for alleviating these behavioural difficulties often include behaviour therapies, functional assessment, interventions early on and pharmacological interventions (Sturmey, n.d.).

Functional assessment has shown remarkable results in identifying the cause of problem behaviours (Chezan, Drasgow & Martin, 2014; Sturmey, n.d.). Functional assessment is a "full range of strategies used to identify the antecedents and consequences that control problem behaviour" (Horner, 1994, p. 401). Functional assessments allow for a more directed approach. By using functional assessment it becomes more clear which behaviours form which function and why (Lloyd & Kennedy, 2014). Once this has been established it becomes easier to develop function-based interventions (Lloyd & Kennedy, 2014). Functional communication training (FCT) has shown significant results in helping adults with ID (Chezan et al., 2014). FCT can be defined as a treatment which is used to replace challenging behaviour with more appropriate communicative behaviours (Falcomata & Wacker, 2013). FCT would therefore be the intervention which follows after completing functional assessments. Chezan et al. (2014) found that FCT has significantly reduced

problem behaviour through learning to communicate instead of using behaviour. Chezan et al. (2014) used only three individuals in their study – one showing signs of attention difficulty and the other two having shown aggressive behaviour.

Other behavioural techniques such as positive and negative reinforcement have also been used to help with behaviour difficulties. Differential reinforcement interventions appeared to be effective in eliminating challenging behaviour (Lloyd & Kennedy, 2014). According to Lloyd and Kennedy (2014), differential reinforcement is the process of extinction through which negative behaviours are not reinforced – for example, not giving the child the toy because he or she is crying. Crying in this instance is the negative behaviour, and by giving the toy that behaviour would be reinforced. The next step in differential reinforcement would then be to reinforce positive behaviour (Lloyd & Kennedy, 2014). This would be done by giving the toy to the child after he or she has said 'toy please' or anything similar. FCT makes differential reinforcement easier. By teaching the individual effective communication strategies the individual reinforcement would encourage positive behaviours (Lloyd & Kennedy, 2014).

Sturmey (n.d.) noted that by identifying the cause of the aggressive behaviour through functional analysis, one can accurately identify the causes and tailor interventions according to the needs of the person. Sturmey (n.d.) noted that if a child is aggressive due to lack in routine or structure, a tailored schedule should help reduce those aggressive symptoms. Recently Pinar (2015) used time-based attention schedules to reduce problem behaviour in children with and without intellectual disabilities. It was found that with such a time-based schedule task behaviour had increased and problem behaviour decreased (Pinar, 2015). Lloyd and Kennedy (2014) describe a similar time-based process as non-contingent reinforcement (NCR). With NCR a fixed timed schedule independent of responding is used to reinforce behaviour (Lloyd & Kennedy, 2014). When negative behaviour is noticed no

reinforcement is given, irrespective of the time schedule (Lloyd & Kennedy, 2014). According to them this method has been greatly effective in decreasing problem behaviour (Lloyd & Kennedy, 2014).

Although behavioural interventions has shown significant effects in eliminating challenging behaviour, it is important to note that it is not the only method that can be used to address challenging behaviour in children suffering from ID. Swan and Ray (2014) found that with child-centred play therapy they were able to decrease signs of irritability and hyperactivity in two children. Their study however consisted of only two children, ages 6 and 7 (Swan & Ray, 2014), therefore making the sample too small to generalise any findings. Other methods for decreasing challenging behaviours include pharmacological treatments.

3.2.3.2 Pharmacological Treatments

The difficulty that people with ID experience with communication, makes it more challenging to establish the extent to which any co-morbid diagnoses may exist (Hurley, 2006). Hurley (2006) noted that often behavioural signs such as aggression or irritability could point to mood disorders. Treatment such as electroconvulsive therapy (ECT) and pharmacological treatments have been deemed effective (Hurley, 2006). Antipsychotic medications have also been used to treat challenging behaviours in individuals with ID (McQuire, Hassiotis, Harrison & Pilling, 2015).

Anti-depressants such as selective serotonin reuptake inhibitors (SSRI's) and clomipramine have been effective in alleviating symptoms of depression in individuals with ID (Hurley, 2006). According to McQuire, et al. (2015) studies have shown mixed results with medications such as risperidone, olanzapine, piracetam, aripiprazole, topiramate and n-acetylcysteine to alleviate challenging behaviours. Other medications include ritalin and risperidone which have been effectively used to reduce symptoms of hyperactivity, lithium which has decreased symptoms of aggression and self-injurious behaviour and beta

blockers which have been effective in reducing explosive rage symptoms (Sadock & Sadock, 2007). There is however certainty that these medications have significant side effects (McQuire et al, 2015). Anitpsychotics such as risperidone indicated that individuals have weight gain, increased levels of prolactin and sedation (McQuire et al., 2015). However, most studies do not provide the long-term outcome of using pharmacological treatments (McQuire et al., 2015; Sadock & Sadock, 2007). Despite the evidence of side effects and no long-term evidence, antipsychotic medication is still commonly prescribed for challenging behaviours in individuals with ID (McQuire et al., 2015).

3.2.4 Educational treatments

Educational treatments are aimed at training people with ID various adaptive skills, which will help improve their quality of life (Sadock & Sadock, 2007). Mechling, Gast and Langone (2002) used a computer-based video programme to help children between the ages of 9 and 17 with ID to read grocery aisle signs and locate items. They found that with the computer-based programme alone they were able to successfully teach the children to independently locate items in a grocery store (Mechling et al., 2002).

Other educational methods aim at teaching individuals methods which will help with communication and social skills to adapt to real-life situations (Sadock & Sadock, 2007). Another alternative treatment for children with disabilities is the use of cognitive development through robotics (Cook, Adams, Enracnacao & Alvarez, 2012). Cook et al. (2012) concluded that the use of robotics with children with disabilities can help those children with cognitive skills in play, education and overall independence. Further alternative interventions are the use of animals in the treatment of ID. The use of AAI will be discussed in the following section.

3.3 HUMAN-ANIMAL INTERACTIONS

3.3.1 Introduction

Human-animal interactions (HAI) have shown physical and emotional changes in humans (Adams, 2009; Kesner & Pritzker, 2008; Walsh, 2009). Adults, children and families have reaped the benefits of having animals or pets in their households, whether they interact with the animals therapeutically or unstructured.

Animal-assisted intervention (AAI) has indicated a reduction in stress and assisted in reducing health-related problems such as blood pressure (Jenkins, 1986; Johnson, Odendaal & Meadows, 2002; Morrison, 2007; Odendaal & Meintjes, 2003). Some of the most common animals used in AAI are horses and dogs (Keino et al., 2009; Martin & Farnum, 2002). However, everyday household pets have also shown great results with children and adults. Walsh (2009) noted that pets in a household can help with family bonds. Walsh (2009) further indicated that pets can provide support and facilitate with resilience and coping as well as encourage communication in a family system.

AAI has proven to be effective in improving physiological, emotional and mental health. Below is an extensive discussion of the effects of and the contexts in which AAI was found to be beneficial.

3.3.2 Physiological effects of animal-assisted interventions

Studies have indicated that even by observing animals, one can experience reduced physiological response to stress and have an elevated mood (Fawcett & Gullone, 2001). Besides the physical enhancements or changes noted in human-animal relationships, these relationships with animals also yield neurological changes in humans. Yorke (2010) noted in trauma cases, that interaction with animals can reduce stress and aid in trauma recovery. He further found,

> children's regulatory limbic circuits may react rapidly to animal interactions responding to proximity, touch, warmth and responsiveness. The ventral system becomes activated, along with the hippocampus and amygdala in response to these novel experiences (interaction with an animal) in the environment. (Yorke, 2010, p. 566)

In essence, the areas in the brain which are responsible for pleasure and excitement will become heightened, interacting similar to an anti-depressant (Yorke, 2010). In a South African study Odendaal and Meintjes (2003) found that certain neurochemicals are released in both humans and animals while having interaction. According to Odendaal and Meintjes (2003), neurochemicals such as oxytocin, prolactin, β-phenylethylamine and dopamine had increased in both humans and dogs after interacting (Odendaal, 2000). Further, cortisol had also decreased in humans after human-animal interaction (Odendaal, 2000; Odendaal & Meintjes, 2003). All these neurochemicals are responsible for positive, pleasurable sensations evident in both humans and dogs after they have had positive interactions (Odendaal & Meintjes, 2003). Okita (2013) used robotic animals in a therapeutic setting and she found that even with robotic animals children who are in hospital had decreased pain and negative emotional traits when engaging in this form of therapy. Therefore, the suggestion is that all forms of animals can cause a positive physiological reaction.

Therapeutic Horseback Riding (THR), can also indicate positive psychological and physiological effects on breast cancer survivors (Cerulli et al., 2014). Cerulli et al. (2014) did a study on breast cancer survivors and THR with a sample of 20 women who had had mastectomies and completed cancer treatments six months prior to the study. Through using THR significant improvements were indicated in their quality of life, strength, aerobic capacity and body composition (Cerulli et al., 2014). Animals can also contribute to the health of cardiovascular diseases (Wolff & Frishman, 2005). It has been indicated that

animals can help reduce blood pressure, reduce stress and improve survival of myocardial infarction (Wolff & Frishman, 2005). Friedmann, Katcher, Lynch and Thomas (1980) further indicated that pet ownership will improve survival rate for individuals released from a coronary care unit.

Besides the physiological changes AAA can contribute to humans. Recently it has been suggested that dogs can also be trained to help in the detection of medical conditions. Wells (2009) noted that dogs are in the process of being trained to detect the onset of seizures in humans. Further studies are also being done to establish whether or not it is possible for dogs to detect cancer and tumours as well (Wells, 2009). It is perhaps important to note that already dogs are often aware of their owners' emotions and behaviours without them being trained to do so (Wells, 2009).

3.3.3 Emotional effects of animals on humans

Walsh (2009) noted the importance of pets in our lives. It has been found that human-animal companionship provides great benefits, but the suggestion was that future investigations look into pet ownership and the value pets add to our lives (Friedmann et al., 1980). As years had progressed from 1980 many further studies had been done on pet ownership and the effects that such ownership has on humans. Herzog (2011) found that people who own pets consider them as family members and find them beneficial for companionship, having a play partner, and having a need to care for another animal. In the elderly community walking with their dogs was seen as a form of exercise (Knight & Edwards, 2008). Interaction between humans and dogs is also seen as a mechanism which enhances social support, and the physical and psychological health of the elderly (Knight & Edwards, 2008). Regardless of age, pet owners see their pets often facilitate relationships with other people and pets for practical and emotional support (Knight & Edwards, 2008; Walsh, 2009; Wood et al., 2015). Wood et al. (2015) found that pet owners were more likely to get to know their

neighbourhood through their pets than non-pet owners. Pets therefore allowed people to establish relationships with other people in their neighbourhood, whether it be through casual interaction or actually getting to know people (Walsh, 2009; Wood et al., 2015).

Walsh (2009) noted that close relationships or attachments with pets could be seen as affections which are misplaced or seen as an inability to form healthy relationships with other humans. However, most people who have such a strong attachment to their animals are also seen to be people with more empathy, compassion and love (Walsh, 2009). Many individuals with animals are reported to suffer less from depression, anxiety or other social and medical distress when they have close attachments with their dogs through caring for it (Andreassen, Stenvold & Rudmin, 2013). Difficult times, such as death in a family or arguments in the family, were more easily overcome with the presence and the behaviour of a pet (Rujoiu & Rujoiu, 2014). Rujoiu and Rujoiu (2014) further found that owners mentioned having seen unusual behaviour in their pets when, as owners, they were angry, anxious or unable to control their own emotions. “As social interactions are especially important to dogs, it is not surprising that they both elicit and respond to the feelings, intentions, and behaviour of their closest human companions” (Walsh, 2009, p. 469). Therefore, one can assume that even though animals do not speak human language, they do understand and communicate with humans in other ways (Walsh, 2009).

Strong attachments to companion animals or pets could also be seen as a potential threat. Peacock, Chur-Hansen and Winefield (2012) found that strong attachments to companion animals or pets highlight psychological vulnerability of the owners. It was found that strong attachment to a companion animal predicted distress such as depression, anxiety and somatoform symptoms for owners (Peacock et al., 2012). Further, many pet owners are found to refuse or delay medical treatment such as surgery as they think it would mean they have to spend time away from their companion animal (Friedmann et al., 1980; Peacock et

al., 2012). Similarly, Rujoiu and Rujoiu (2014) found that as pets provide emotional support to owners and owners have a strong attachment, they also experience great pain with the loss or death of a pet. More so, owners acknowledged that the death of a pet is felt more intensely and severely than the loss or death of a family member or friend (Rujoiu & Rujoiu, 2014). Feelings associated with the loss or death of a pet include sadness, depressive symptoms, hopelessness, regret and emotional trauma (Rujoiu & Rujiou, 2014).

Adamle, Riley and Carlson (2009) looked at whether college students would be interested in having a pet therapy programme on campus. Results indicated that the students thought it would be beneficial to them as many of them were away from home and noted that it would provide support for them (Adamle et al., 2009). Many students leave their pets at home when they go away and further their studies elsewhere. Such students felt that pet therapy would fill the void of being away from their own pets (Adamle et al., 2009; Reynolds & Rabschultz, 2011). Pets often provide social support during stressful situations and work as catalysts to form new social relationships (Adamle et al, 2009; Allen, 2003). It could therefore be useful to include such therapy to others in psychological distress. Reynolds and Rabshultz (2011) implemented an animal-assisted programme at a university and their results indicated that such a programme was well received by the students and had helped relieve the students' stress.

[1]Animal-assisted therapy (AAT) can be an effective treatment in a therapeutic setting. AAT is helpful to individuals who had traumatic experiences in their lives (Zilcha-Mano, Mikulincer & Shaver, 2011). In difficult cases, such as when the client finds it difficult to trust another human, AAT can be a powerful way to break the barrier (Zilcha-Mano et al., 2011). With AAT they are then able to create more secure attachments, and further learn to verbalise

[1] AAT is a form of AAI in which there is an animal and a trained professional such as psychologist who has been trained in animal interventions specifically (Kruger & Serpel, 2010).

emotions, feelings and thoughts (Zilcha-Mano et al., 2011). [2]AAA has also been effective in reducing state anxiety in a laboratory setting (Shiloh, Sorek, & Terkel, 2003). The results from Shiloh et al. (2003) indicated that both hard-shelled and soft animals show anxiety-reducing effects with both animal lovers and those who are not. AAT has further shown to be effective with individuals suffering from aphasia. Results indicated that participants were more motivated, showed more emotion and enjoyed the therapy with an animal; more so than with a speech-language therapist (Macauley, 2006).

3.3.4 Benefits of AAI in mental health

AAA has proven to be positive indicators for symptoms of depression, self-esteem and anxiety (Corring, Lyndberg & Rudnick, 2013; Lynch et al., 2014; Nepps, Stewart, Stephen & Bruckno, 2014).

Loneliness is a feeling which the majority of people often experience and for some it often entails negative feelings and thoughts (Meltzer et al., 2013). The problem however, is that loneliness can often be associated with or lead to mental disorders such as depression and anxiety (Meltzer et al, 2013). Meltzer et al. (2013) suggest that these feelings can be addressed by increasing social support and social interaction. One way of doing that could be through making use of AAT.

AAT has produced contradictory results in the treatment of depression. Barker, Pandurangi and Best (2003) found that AAT did not alleviate symptoms of depression. On the other hand, Lynch et al. (2014) found that symptoms of depression and anxiety were relieved through AAT. Further significant results were also found by Nepps et al. (2014). They found that symptoms of depression, anxiety and pain were alleviated in an AAA programme compared to a stress management programme. Gaps in research indicated that studies

[2] AAA (also a form of AAI) is used in a variety of programmes which act as catalysts in different situations (Berry et al., 2013).

often have shortcomings in their design (Souter & Miller, 2007) which could be the reason for the contradictory results. Souter and Miller (2007) found that studies often do not make use of randomly assigning treatment and control groups. However, Souter and Miller (2007) did a meta-analysis of current research and found statistically significant results in reducing symptoms of depression by making use of AAA and AAT.

AAT is also often used in institutions and psychiatric wards for the alleviation of individuals who are there for a long period of time. AAA has shown promising effects in the treatment of depression and agitation in elderly patients in nursing homes and institutions (Berry et al., 2012; Majić, Gutzmann, Heinz, Lang & Rapp, 2013). Majić et al. (2013) found that with elderly people suffering from dementia, there was a decrease in symptoms of agitation, but due to not having a control group it could not be verified that it was because of AAA. Norgen and Engström (2014) further found non-significant results with an AAI for individuals with dementia. However there was a small (non-significant) difference found between the baseline and immediately after the intervention for physical non-aggressive behaviours and behavioural and psychological subscales. These results once again suggest that AAI could provide an alternative method of treatment (Norgen & Engström, 2014).

Further studies with dementia and AAT found that although indicated that individuals could communicate with the dogs and their apathetic state improved, no significant results were measured on depression and irritability scales (Motomura, Yagi & Ohyama, 2004). Contrary to these findings, Le Roux and Kemp (2009) found a difference in the depression levels of elderly individuals in long-term care facilities in South Africa. They noted that AAA provided the individuals in the facility with increased social interaction and the individuals gave positive feedback on the intervention (Le Roux & Kemp, 2009). Similar significant results were also found where depression symptoms alleviated and cognitive functioning improved in elderly with mental illness (Moretti et al., 2011). Moretti et al. (2011) noted that that AAA

had been accepted by the elderly as enjoyable and very interesting – which suggests positive effects on elderly in care facilities, regardless of the significance on measures.

AAT has also indicated promising results with people with schizophrenia in an institutionalised setting (Corring et al., 2013; Kovács, Kis, Rózsa & Rózsa, 2004). Corring et al. (2013) found that THR brought happiness, bonding time and increased self-esteem in patients suffering from schizophrenia. THR may be an effective intervention for patients with schizophrenia (Corring et al., 2013). With THR clients felt that they have learned other forms of communication, being present in the moment, assertiveness, feeling less guilty, being more independent and being relaxed (Klontz, Biverns, Leinart & Klontz, 2007; MacLean, 2011). AAT has further indicated significant improvement in domestic and other health activities in individuals with schizophrenia (Kovács et al., 2004). Social functioning, general well-being and daily living activities improved (Barak, Savorai, Mavasbev & Beni, 2001). Nathans-Barel, Feldman, Berger, Modai and Silver (2005) also found that AAT alleviated symptoms of anhedonia in individuals suffering from schizophrenia and the individuals further expressed feelings such as caring, attachment to sadness and loss at termination with AAT.

AAT could potentially be greatly beneficial for a variety of psychiatric diagnoses both in and out of hospital. In a hospital setting AAT provided adolescents with a catalyst for interaction, a friend and a therapist (Bardill & Hutchinson, 1997). Adolescents with psychiatric diagnoses such as eating disorders, mood disorders, schizophrenia and anxiety disorders have also found AAT to improve their global functioning and reduced format of care (Stefanini, Martino, Allori, Galeotti & Tani, 2015).

3.3.5 Animal-assisted interventions and children

Children showed particularly positive results when interacting with animals in a therapeutic setting (Kesner & Pritzker, 2008). Boris Levinston noted the following: “The way a child

handles his pet is much more expressive and revealing of his problem and his attitude toward the world than his finger printings or his play with puppets" (Levinston, 1965, p. 696). The nature of human-animal interaction with children is seen as unconditional positive regard, a useful "bridge" when establishing a relationship between the child and a therapist (Fawcett & Gullone, 2001; Friesen, 2010; Levinston, 1965). Animals should therefore be acknowledged and respected as pedagogical for children (Bone, 2013).

Animals in therapy have previously created a calming, less threatening atmosphere which allows the therapist and child to work through trauma more easily, especially in cases where the child does not easily trust adults (Parish-Plass, 2008). Animal therapy has further proven to better a child's mood and improved positive affect in a hospital setting (Kaminski, Pellino & Wish, 2002). Other studies with animal-assisted interventions have further shown a significant reduction in pain experienced by children who are hospitalised (Braun, Stangler, Narveson & Pettingell, 2009; Calcaterra et al., 2015; Goddard & Gilmer, 2015). Equine-assisted activities (EAA) also indicated significant results with at-risk children (Holmes, Goodwin, Redhead & Goymour, 2012; Kemp, Signal, Botros, Taylor & Prentice, 2014). Children felt happier and more confident, they showed improvement in their behaviour, better sense of self-esteem and a greater desire to interact with others after therapeutic horseback riding (Kesner & Pritzker, 2008). Holmes et al. (2012) found that EAA helped reduce anxiety, whereas Kemp et al. (2014) further found EAA reduced depression and undesirable behaviours as well.

Repeated interactions between children and animals have led to a foundation for goal-orientated literacy learning (Friesen & Delisle, 2012). Lane and Zavada (2013) noted that "some children find reading difficult, frustrating, and embarrassing. Reading to a caring and cuddly canine companion can make the activity enjoyable and motivate even the most reluctant reader" (p. 87). Dog-assisted reading programmes is an activity in which children

who struggle with reading get the opportunity to read to canine companions (Lane & Zavada, 2013). The goals of such a programme include aiming to increase the child's fluency and motivation in reading (Lane & Zavada, 2013). Animals in an animal-assisted reading programme will provide a non-judgmental environment and encourage self-confidence (Le Roux, Swart & Swart, 2014). In a South African sample Le Roux et al. (2014) also found that learners in an animal-assisted reading programme had significantly better reading comprehension than learners who read to a teddy bear or an adult. Thus, an animal-assisted reading programme could potentially increase children's reading potential (Hall, Gee & Mills, 2016; Le Roux et al., 2014).

Animal-assisted interventions can be effective in a variety of settings. Moreover, it has been effective with different disorders, including autism spectrum disorders (ASD) in children (Kršková, Talarovičová, & Olexová, 2010; Prothmann, Ettrich, & Prothmann, 2009; Ward, Whalon, Rusnak, Wendell & Paschall, 2013). With the help of THR social interaction increased, sensory processing improved, and severity symptoms have decreased in children with ASD (Ward et al., 2013). THR has further helped to improve target behaviours during and after an intervention with children suffering from ASD (Holm et al., 2014). THR also improved the posture of chidlren (Jenkins & DiGennaro Reed, 2013). One can therefore conclude that AAI and THR are effective with children in a variety of settings.

3.4 AAI AND CHILDREN WITH INTELLECTUAL DISABILITIES

Animals contribute largely to both the physical and the psychological health of humans. It is, however, relevant to identify how AAI has influenced children with ID. AAI has been proved beneficial on a wide spectrum from conduct disorder and attention-deficit hyperactivity disorder (ADHD) to disorders which incorporate shyness, various other psychosocial difficulties and introversion (Burgon, 2011; Fawcett & Gullone, 2001). These disorders include disorders like ASD and pervasive developmental disorders.

Research contributing to the treatment of ASD and other pervasive developmental disorders have shown great results with verbal and non-verbal communication skills, social interaction and sensory awareness (Bass et al., 2009; Gradin, Fine & Bowers, 2010; Keino, et al., 2009; Kesner & Pritzker, 2008; Martin & Farnum, 2002). Research on AAI has shown improvements in behaviour and competency of those suffering from ID and other physical disabilities (Adams, 2009; Burgon, 2011). In essence, having the presence of an animal can show improvements on a wide spectrum such as communication skills, behavioural changes and social skills. Therefore, avoiding the important role that animals can play in children would be a loss to the research field (Fawcett & Gullone, 2001).

Children with behavioural and emotional problems have shown improvements in target behaviours through the use of a dog visitation programme. These improvements were maintained over time (Bassette & Taber-Doughty, 2013). This shows that such an intervention would not only work on the short term, but rather that the effects of it would be maintained over longer terms. It is therefore concluded that targeted behaviours can be improved with the help of AAI, thus making AAI an effective alternative treatment for emotional and behavioural problems (Adams, 2009). In essence, AAIs have shown great results with children suffering from various disabilities (Bassette & Taber-Doughty, 2013; Bugon, 2011; Martin & Farum, 2002). However, not all studies show positive results. Ewing, MacDonald, Taylor and Bowers (2007) found non-significant results, indicating that there were no changes in any areas of the children's functioning. They highly recommend further studies within this field (Ewing, et al., 2007). Kazdin (2010) further explained that although we know the benefits which AAI holds, evidence is often not empirically studied and substantiated – thus suggesting that AAI does not always work.

Depending on the severity of symptoms, AAI can be beneficial for different groups and it will be beneficial to some more than to others (Van den Hout & Bragonje, 2010). Van den Hout

and Bragonje (2010) specifically found that AAI is more likely to be beneficial to children lower on the ASD spectrum versus children higher on the spectrum.

Other areas of improvement have also been found in the attention span of children. They would more easily pay attention to an actual dog than to a stuffed animal (Martin & Farnum, 2002). Children were able to pay better attention and focus for a longer period of time after taking part in an AAI (Bassette & Taber-Doughty, 2013; Borioni et al, 2012). Adams (2009) found that children are also able to cooperate and show improvements in obedience after AAI. Smith-Osborne and Selby (2009) found that mental challenges and compliance can be made easier through AAI.

Even with significant studies within the field of AAI and children suffering with ID, the field of AAI and ID is highly under-researched and more investigation is recommended (Lima, Silva, Amaral & De Sousa, 2012). More so, the use of AAI in South Africa has also been largely under-researched – specifically relating to children (Lubbe & Scholtz, 2013). In addition to this, it is recommended that more rigorous and scientific protocols be used to pursue AAI with individuals who are intellectually disabled (Lima, et al., 2012).

3.5 AAI STUDIES IN SOUTH AFRICA

Previous research such as Odendaal (2000), Odendaal and Meintjies (2003), Le Roux et al. (2014) and Le Roux and Kemp (2009) have done various studies relating to AAI and the neuropsychological effects humans and dogs have on each other. There are however, other studies which have also been done in South Africa.

Lubbe and Scholtz (2013) made use of AAT in a South African case study. They found that through AAT the individual had better self-esteem, better communication, enhanced socialisation, experienced more physical affection through the dog and the dog had enabled a facilitating relationship between him and the therapist. Although the study was only a

single case, it indicated significant results, encouraging more in-depth studying in the field of AAA (Lubbe & Scholtz, 2013). Similar results were found with learners suffering from ID whose physical development as well as self-esteem and confidence increased after THR (Surujlal & Rufus, 2011). Surujlal and Rufus (2011) found inconclusive results on social interaction. Rinquest (2005) found that learners suffering from autism had better attention span, physical orientation and had become calmer following AAT. Children with disabilities can also greatly benefit from THR (Boyd, 2015). Boyd (2015) made use of a qualitative study where she had interviews with the parents of children with disabilities. She found that the children had improved physical, psychological, cognitive and social functioning and quality of life (Boyd, 2015). Boyd (2015) encourages future studies to make use of mixed methods designs to support the perceptions of the parents.

Significant effects were found when De Villiers (2004) did a study on the effect of THR on the awareness on a child with FAS. De Villiers (2004) found that the child experienced a better therapeutic relationship, improved attention span, sensory awareness and mastery. This is in line with some of the other findings on South African vulnerable populations (Rinquest, 2005). A case study involving a boy with aggression found that horses enabled a nurturing bond with the child. He had improved social skills, allowing for better nonverbal communication after the intervention (Bronkhorst, 2006). This once again indicates that animal interactions can reduce various behavioural problems in troubled and vulnerable children populations.

3.6 SPECIAL NEEDS SCHOOLS IN CAPE TOWN

3.6.1 School 1

School 1, a government school situated in Kuils River, provides professional, specialised education to children with intellectual disabilities from various cultural backgrounds. Most children at school 1 would not benefit from mainstream schools. At school 1 each learner is

provided with the opportunity to learn and progress at their own pace and according to their own abilities in order to become the best self-supporting adult they can be within their community.

School 1 has 5 different learning phases namely: junior, intermediate, senior, pre-vocational and vocational phases (About Us, n.d.). Each learner can remain in their phase for as long as it would need for them to reach the emotional development, age and level of progress before considered ready to be promoted to the next phase. Some aspects of the curriculum include: social and life skills, effective communication, optimum motor and perceptual skills as well as functional scholastic skills (About Us, n.d.).

3.6.2 School 2

School 2 is a school where children on the autism spectrum as well as children with special needs are taught the national curriculum (About Us, 2012a). Some children at school 2 have never been able to enter mainstream schools. In this school they are taught, supported and understood, and they often make friends (About Us, 2012a).

Some of the aims at school 2 include: providing education for children who have learning difficulties, providing a structured holiday programme, providing a safe and nurturing environment for the children, as well as providing an after care facility (About Us, 2012a). They also aim to provide the children a chance to reach and maintain optimum sensory, physical, intellectual and social functioning levels over a long period of time (About Us, 2012a). They help children with developmental disabilities by giving them tools to help reach a better independence, self-confidence and well-being (About Us, 2012a). School 2 also co-operates with the Western Cape Education Department (WCED) (About Us, 2012a).

3.6.3 School 3

School 3 is also a WCED school in the Cape Town area that makes provision for children with ASD (CharitySA, n.d.). School 3 makes use of a curriculum which aims to deliver education relevant to their impairment (About Us, 2012b). Some of the learning areas for the children include: language and communication, social interactive behaviour, motor movement, daily living independent skills and numeracy (About Us, 2012b).

School 3 further makes use of an independent education and development programme (IEDP), which includes a trans-professional team (About Us, 2012b). This team consists of a class teacher, teacher assistant, parents, psychologist, occupational therapist, speech therapist, as well as the school principal or deputy principal (About Us, 2012b). This IEDP makes use of assessments for establishing the learners' level of functioning for improving and understanding the learners' knowledge (About Us, 2012b). The IEDP is also seen as a dynamic interaction amongst the team members (About Us, 2012b). This education process is done purely for establishing the abilities of the child and being able to adapt an appropriate system for the child by means of which they can reach optimum achievement.

3.7 AAI ORGANISATIONS IN SOUTH AFRICA

3.7.1. Pets as Therapy (PAT)

Pets as Therapy (PAT) (see Addendum B) is an organisation which makes use of animals (mostly dogs) and their owners to visit retirement homes, frail care facilities, special needs facilities as well as hospitals (*Pets as Therapy*, n.d.). Although the organisation is mainly situated in the Western Cape, some of their services are available in the rest of South Africa. The visits have proved to help individuals reduce stress and discomfort, help with support and bring company to those living in the facilities (*Pets as Therapy,* n.d.).

In order for PAT to visit these facilities the owners and their animals go through a screening and assessment process to ensure that they are suitable for the placement (*Pets as Therapy*, n.d.). The owners have to complete an application form, followed by evaluations and assessments for their pets in accordance with the requirements of the Canine Good Citizenship Certificate (Le Roux, 2013). Based on their performance during the evaluations they are accepted for PAT visitations (Le Roux, 2013). All animals are required to be vaccinated and clean when visiting (*Pets as Therapy*, n.d.). Lastly, the facility needs to agree to the visitations by the animals and their owners (*Pets as Therapy*, n.d.).

During the visitation process, it is vital for the volunteer to be aware of the dog's or cat's behaviours at all times as their health is of importance. If the animal becomes stressed or uncomfortable, the animal needs to be removed from the facility immediately (Le Roux, 2013). Each volunteer pays an annual membership fee which is partially used for PAT's public liability insurance. Public liability insurance must be obtained for every facility visited by PAT (Le Roux, 2013). The values and goals of this organisation are

> enriching the lives of people who are residents or patients at a variety of organisations and facilities in and around the Western Cape and further afield. We achieve this through friendly, regular and controlled visits by accredited volunteers and their animal companions (*Pets as Therapy,* n.d.).

More information and frequently asked questions regarding Pets as Therapy can be found in Addendum C.

3.7.2 TOP dogs

Touch Our Pets Therapy Dogs (TOP dogs) is an organisation started by eight therapy dog handlers and their pets in 2008 (*TOP dogs,* n.d.). Their motto is "TOP dogs spread smiles for miles- this is being achieved, on a regular basis, with visits from our friendly non-threatening

dogs, to many local venues" (*TOP dogs,* n.d.). TOP dogs is therefore an organisation which makes use of AAT, AAA and AAI through visitations to different facilities (*TOP dogs,* n.d.). TOP dogs is however primarily based in Johannesburg and surrounding areas, which is why the current study will make use of Pets as Therapy.

3.8 SUMMARY

The above literature broadly discussed ID with its various co-morbid diagnoses and symptoms which are inclusive of other mental, physical and medical symptoms or diagnoses. An attempt was made to take into account how gender influences ID. Alternative interventions, more specifically how AAI has affected the general population and more so its effect on ID, were discussed. The following chapters will explain in more detail the methodology used in the current study as well as the results, discussion and ethical considerations utilised in the study.

CHAPTER 4

METHODOLOGY

4.1 INTRODUCTION

A quantitative approach was used to study the effect of an animal-assisted intervention programme on learners at a school for children with intellectual disabilities. More in depth details of the methodology used is discussed below. This includes the research design, a description of the participants and procedure used as well as the measurements and ethical considerations used in the current study.

4.2 DESIGN

Social science research often forms part of many purposes, some of the most common purposes include explanation, description or exploration (Babbie, 2008). Each of these methods thus seek different purposes, for example: explanatory research aims to explain the why, when, where and how; exploratory research seeks to examine new interests and descriptive research aims at describing and observing the topic at hand (Babbie, 2008).

AAIs are designed to improve functioning and decrease social, cognitive, behavioural and emotional problems in individuals (Kazdin, 2010). Kazdin (2010) goes further and suggests a guide of methodological practices for psychotherapy outcome research. He suggests that the following be taken into account:

- randomly assigning participants to conditions,
- using inclusion and exclusion criteria to specify the sample,
- making use of strong control groups,
- using treatment manuals which will allow for replication of treatments by other investigator,
- assessing the integrity of the treatment used,
- using multiple assessment methods,
- evaluating the clinical significance or change, and
- evaluation of follow-up treatments (Kazdin, 2010).

With this in mind it is vital for a research study to conform to a purpose and method of research, or also known as a research design. Research design thus “involves a set of decisions regarding what topic is to be studied, among what population, with what research methods, for what purpose” (Babbie, 2008, p.122). The current study made use of a quantitative explanatory approach using a pretest-posttest control group design (Babbie, 2008). The nature of explanatory research is to elicit a causal inference of the covariance of events, therefore hypothesising that due to the event taking place the end result will have inferences (Shaughnessy, Zechmeister & Zechmeister, 2009). The study made use of a research randomiser program to randomly assign participants into an experimental and control groups. Therefore the researcher had no part in deciding which participants would receive the intervention and which not.

4.2.1 Randomised controlled study

In this design the participants are randomly divided into two groups. The one group received

an intervention and the other group continued with normal everyday activities. This is done to reinforce the notion that the experiment is what caused any differences between pretest and posttest results (Babbie, 2008). Kazdin (2010) explained that previous studies made use of pretest-posttest designs to explain causal effect of an intervention. However, without a control group the effect of the intervention could be due to a variety of changes not associated with the animal-assisted intervention itself. Therefore, it has been suggested that future studies should include a control group or non-treatment group in the methodological design to eliminate causal assumptions (Kazdin, 2010).

4.3 PARTICIPANTS

All the children in the age group 10 to 12 years were asked to take part in the current study. These children are from a school for children with special needs situated in Kuils River, Cape Town, Western Cape. Co-morbid diagnoses at the school include cerebral palsy, intellectual disabilities, physical disabilities, Down's syndrome and foetal alcohol syndrome (FAS). For the purposes of the current study the inclusion criteria of a primary diagnosis of intellectual disability and an age group of 10 to 12 years were used. This age range was chosen as they fall within the intermediate curriculum phase at the school. The demographical information of the participants are found in Table 4.1

Table 4.1

Demographical Information of Participants (N = 47)

		Experimental (n = 23)	Control (n = 24)
		f	**f**
Gender	Male	15	11
	Female	8	13
Age	Mean	10.95	11.27
	SD	0.79	0.84
Race	White	2	1
	Black	4	3
	Coloured	16	19
	Indian	1	-
	Other	-	1
Diagnoses	ID	23	24
	ADHD	9	6
	Cerebral Palsy	1	2
	ASD	1	-
	Down's syndrome	-	3
	Sotas syndrome	1	-
	FAS	1	-
	Epilepsy	-	2
	Williams syndrome	-	1
	Angelman syndrome	1	-
	Lennox-Gastaut	1	-

Table 4.1 *continued*

		Experimental (n = 23)	Control (n = 24)
Language	English	4	9
	Afrikaans	17	14
	Xhosa	2	1
Pets	Yes	9	10
	No	14	14
Teacher*	1	4	3
	2	2	2
	3	7	4
	4	4	4
	5	3	3
	6	3	8
School phase	Middle	23	24

Note: Teacher* 1-6 indicates the 6 different teachers and how many questionnaires they completed for the experimental and control groups.

4.4 MEASURING INSTRUMENTS

4.4.1 Demographical Information

The current study made use of a demographical questionnaire (see Addendum D). The demographical questionnaire includes questions regarding the name, age, gender, race and language of the child. Identifiable information such as the participant's name was used for the purpose of identifying the participant while analysing the questionnaires and was only used by the researcher. The teachers of the participants were asked to complete the questionnaire. The demographical information was only used to describe the population.

4.4.2 Measurement of Pet Intervention (MOPI)

The MOPI (see Addendum E) was developed to assess the effect of an AAI on the behaviours of individuals (Anderson, 2007). The MOPI has four items, as it measures attention span, physical movement, communication and compliance (Anderson, 2007).

Attention span measures the child's ability to concentrate on the current task or activity without constantly being distracted (Anderson, 2007). Physical movement measures the child's ability to master fine and gross motor skills and intentional movement or mobility (Anderson, 2007). Communication assesses the child's ability to express themselves verbally and compliance includes ability of the child to complete tasks and follow directions (Anderson, 2007). The four questions are measured on a 7-point Likert scale where 1 is (*little to no evidence)* of the behaviour present and 7 is (*very strong evidence)* of the behaviour being present in the child (Anderson, 2007). In a pretest-posttest quasi experimental design which evaluated the effectiveness of an AAT programme on adults with intellectual disabilities, preliminary reliability results indicated a Chronbach's alpha of .0859 (Brown, Swanson, & Shiro-Geist, 2014).

The MOPI was handed to the teachers of the participants to complete prior to and after the intervention (10 weeks) had taken place. In addition to the MOPI, the teachers were expected to complete the Child Behaviour Checklist.

4.4.3 Child Behaviour Checklist (Teacher's form)

The Child Behaviour Checklist (CBCL) is designed to describe children's emotional and behavioural competencies as well as problems (see Addendum F) (Achenbach & Ruffle, 2000). The competency scale on the CBCL measures the child's level and quality of social functioning, social relations and activities (Achenbach & Ruffle, 2000). The CBCL forms are normally completed by both parents and teachers (Achenbach & Ruffle, 2000). However, for

purposes of the current study only the teacher's version of the form was completed, as the teachers are with the children during their academic and interactive part of the day during school hours. The assessment takes approximately 10–15 minutes to complete per learner (Achenbach & Ruffle, 2000). The CBCL has 113 items which can be scored on a 3-point Likert scale where 0 means the behaviour is (*not present)* at all and 2 is (*highly present*) behaviour (Achenbach & Ruffle, 2000). A higher score is therefore an indication that the behaviour is highly present.

Achenbach and Ruffle (2000) further suggested that cut-off points will vary depending on the sample used. Lower cut-off points will be used to indicate diagnoses with less deviant behaviour whereas higher cut-off points will indicate the opposite (Achenbach & Ruffle, 2000). The CBCL is available in more than one language (Achenbach & Ruffle, 2000). The internal consistency of the CBCL is estimated to be between 0.63 and 0.97 in community samples with test-retest reliability between 0.73 and 0.94 on the different items on the scale (Meir, Slone & Levis, 2014). Meir et al. (2014) reported pretest and posttest Cronbach's alpha of 0.92. This was found in a population aged 8 to 12 years old (Meir, et al., 2014). Heimlich (2001) found that together with the Direct Observation Form (DOF) and Child Behaviour Checklist (CBCL) for teachers the inter-rater reliability was low. However, a high consistency was found with two raters (Heimlich, 2001).

Content validity of adaptive, competent and problem item scores on the CBCL was supported by years of research and revision, and all items discriminate significantly ($p<0.01$) between demographically similar non-referred and referred children (Achenbach & Rescorla, 2001)

For purposes of the current study raw scores were used as it is not the aim of the study to establish the norm of each individual child's behaviour, but rather to establish if there was change from pretest to posttest.

4.5 PROCEDURE

Permission was sought from the Department of Psychology at Stellenbosch University, the Research Ethics Committee (see Addendum G) and Research Ethics Committee: Animal Ethics Care and Use (see Addendum H), the Western Cape Education Department (see Addendum I), the school (see Addendum J), parents of the children (see Addendum K), assent from the children (see Addendum L), owners of the dogs (see Addendum M) and from Pets as Therapy (see Addendum B).

The parents of all 61 learners between the ages of 10 and 12 years were asked to give permission for their child to participate in the study. Of the 61 consent forms that were sent to the parents, 51 were received back. Following the consent forms, the learners were asked to complete assent forms (see Addendum K) to take part in the interventions. Of these 48 assent forms were received. The teachers of the school were asked to complete a demographical questionnaire for each learner (see Addendum D), the MOPI (Addendum E) and the CBCL (Addendum F).

The researcher made use of an organisation called Pets as Therapy (PAT), which has volunteers and their dogs who interacted with the participants of the experimental group once a week over a period of 10 consecutive weeks. All dogs used by PAT are well trained and used to working with children in a school setting.

Prior to the commencement of the programme, all the learners were tested by the teachers who had to complete the CBCL and the MOPI questionnaires for each learner. Following the completion of the questionnaires the researcher captured the data. Thereafter the sample

was divided into two equal groups using the [3]research randomizer program. The randomizer program had divided, at random, the sample of 48 into two groups. The first group, the experimental group, received the intervention, whereas the second group, the control group, continued with normal everyday activities. The control group also had the PAT services available to them after the 10-week intervention programme had been completed. Both groups were tested prior to and after the intervention had taken place (see Figure 4.1).

Before the intervention programme took place the teachers were expected to complete the demographical form (see Addendum D), the MOPI (see Addendum E) and the CBCL (see Addendum F). The teachers were expected to do this for all the learners who had given assent to partake in the study and received consent from their parents. After the 10-week intervention, the same teachers that completed the questionnaires at pretesting were expected to complete the MOPI and the CBCL again for both the experimental and control group. The questionnaires (pretest and posttest) were handed to the teachers to complete at the school. It is important to note that data was collected before the intervention took place, but the researcher did not analyse any data at that point. This was done to ensure that each learner had equal chance of being in either the experimental or control group.

[3] Research Randomizer is a free website program which generates random numbers and effectively divides them into groups. This computer program can effectively be used by researchers to divide their samples into randomised groups for experimental other research. More information can be found on https://www.randomizer.org/.

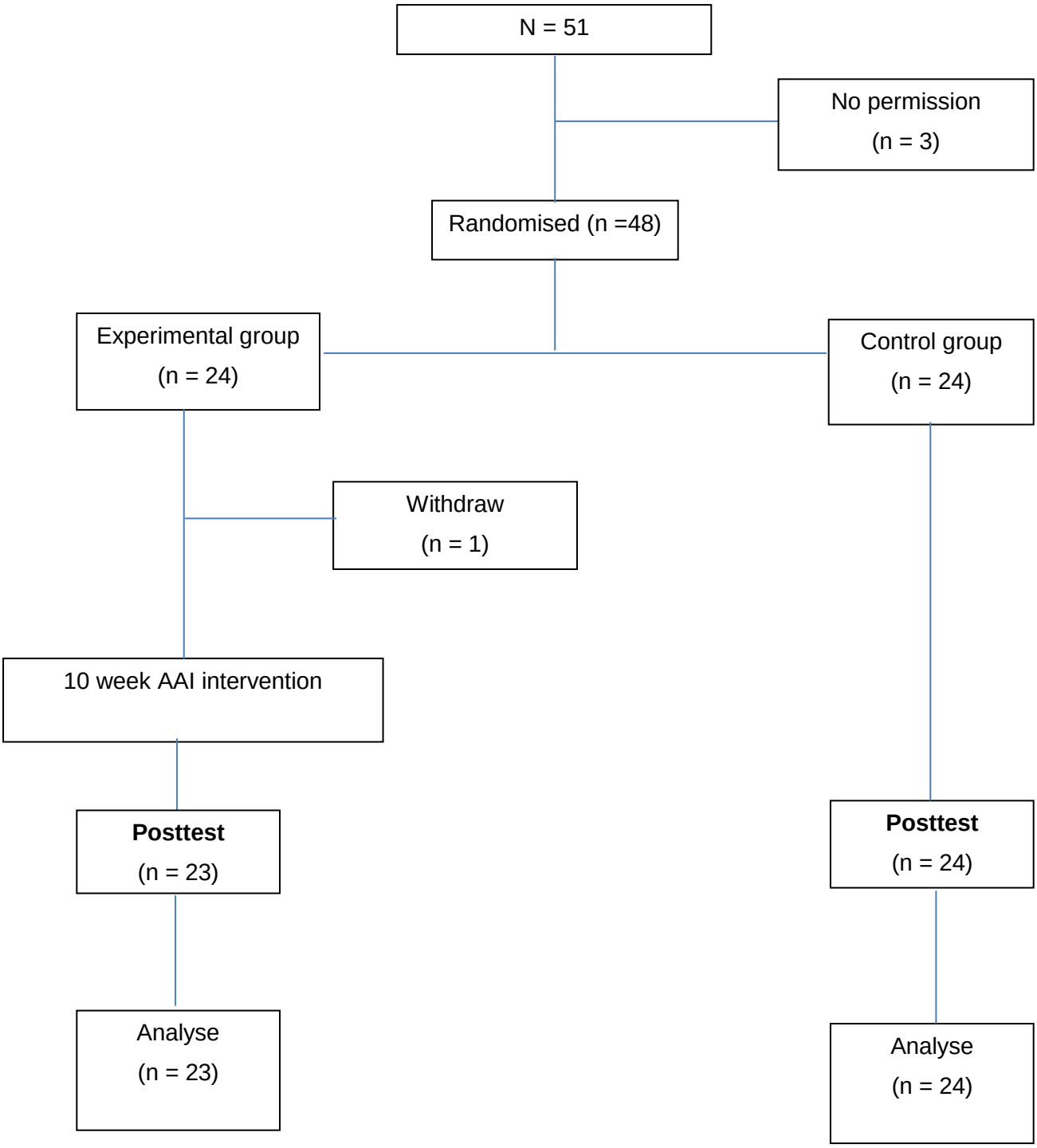

Figure 4.1. Flow diagram

4.6 ANIMAL-ASSISTED INTERVENTION (AAI)

4.6.1 Introduction

The following animal-assisted intervention took place with the experimental group after receiving all the appropriate permissions.

4.6.2 Preparing volunteers

Before the intervention programme took place, the researcher explained to each of the PAT volunteers what was expected of them during the intervention (see Addendum N). This included their roles and responsibilities as volunteers, possible stressors they should look out for in their dogs and details as to the process of the intervention. The volunteers were also expected to complete an animal owner consent form (see Addendum M). The animal-assisted intervention programme took place over a period of 10 weeks during which the handler-dog team visited the school once a week for one hour. Five volunteers and their dogs from PAT were used for the AAI (see Addendum P).

4.6.3 Dog and child interactions

During this hour children in the experimental group had the opportunity for informal activities with the dog; petting, brushing, giving snacks, walking the dog with the owner and talking to the dog while the dog was on a leash. Learners could also sing to the dog, talk to the dog and ask the owner about the dog. The volunteers ensured that the children each had the opportunity to interact with the dog in a manner that would not bring harm to the dog. The owners and their dogs wore identifying PAT t-shirts and scarves indicating that they were part of PAT. The dogs have a fitting personality for visitations at a school according to PAT's standards. Furthermore, the dogs and their owners are registered with the organisation and have public insurance to protect the school as well as the owners and their dogs in case of

any unforeseen circumstances. The dogs included a Maltese poodle, two golden retrievers, a border collie, miniature schnauzer and a German shepherd.

After the interaction the children returned to their normal, daily class activities. The control group received no intervention or interaction with the dogs during the 10-week intervention programme and therefore continued as usual with their daily activities.

4.6.4 Dog and child safety

The interaction time for the experimental group was unstructured and the researcher supervised the activities to ensure that in the event of anything happening she is able to report and assess the situation appropriately. Furthermore, the groups had approximately four assistants from the school that knew the children from class. The interventions occurred at the same time and place every week to maintain consistency. The services of the PAT volunteers and their dogs were made available to the control group and the rest of the school when the posttests were done.

Safety precautions were taken into account for the learners. They had access to the school nurse and the school psychologist in the case of anything happening. The researcher also ensured that there was a seperate enterance and exit for the dogs where they would not be bothered by the other learners in the school. Further, provisions had been made that the intervention took place in a classroom which the learners were used to and which had enough space and ventilation for both the learners and the dogs. It was of vital importance to be aware of any signs of stress and exhaustion in the dogs. If any signs such as yawning, panting, disinterest, moaning or discomfort were noticed the owners immediately excused themselves and their dogs from the room and took them outside to a quiet grass area where they would receive water and walking time. For the safety of the dogs, the researcher ensured that after approximately 20 minutes all dogs had to take a water break outside for 5 minutes before continuing the second half of the session.

4.6.5 School setting

The school provided the researcher with two classrooms situated close to a separate entrance of the school. The classrooms were situated next to each other and had minimum distractions. The 24 children that formed the experimental group were randomly assigned to two groups for the two classes, essentially putting 12 children in each classroom. Within the classrooms the children were again randomly divided into two groups. Each group of 6 children had an opportunity to interact with a dog. Two dogs were put in each classroom for the two groups of 6 children in the class. This allowed for a controlled number of children around the dog at any given time during the intervention. Together with the supervision of the researcher and the school assistants in the classes little disturbance occurred during the intervention.

Each child was given the opportunity to interact with the dog. After approximately 20 minutes the dogs were given an opportunity to take a break and then switch to interact with the other 6 children within the classrooms. That ensured that each child had an opportunity to interact with both the dogs in their classroom for that session. Furthermore, the researcher set up a schedule for the four volunteers, allowing them to rotate classrooms each week, and ensuring that all 24 children had the opportunity during the intervention to interact with the four dogs used during the intervention.

4.7 DATA ANALYSIS

Data was analysed using the Statistical Package for Social Sciences (SPSS) version 21. By using SPSS the researcher specifically looked at skewness and kurtosis of the frequency and distribution of scores. Outliers were also identified. Cronbach's alpha was calculated to determine the internal consistency of the tests. The researcher further used a mixed methods repeated measure to look at the differences in the pretest and the posttest of the

experimental group and the control group. A significant value of $p<0.05$ between groups would confirm the research hypotheses. Professor Kidd, who is employed at the centre of statistical consultation at Stellenbosch University, analysed the data of the current study.

4.8 ETHICAL CONSIDERATIONS

According to Mouton (2001, p. 243), “all subjects have basic rights” within a research environment. Permission was sought from the Department of Psychology at Stellenbosch University (see Addendum H) and the Research Ethics Committee: animal care and use (see Addendum G). Permission was also asked from the Western Cape Education Department (see Addendum I), the school who had participated in the study (see Addendum J) and the parents of the participants (see Addendum K). The following ethical procedures were implemented while conducting the current study: informed consent, anonymity, participant withdrawal, confidentiality and counselling services.

All participants have the right to make an informed decision when taking part in research, thus it is important for the researcher to explain the foreseeable advantages and disadvantages of the research (Mouton, 2001). The researcher made use of informed consent by the parents of the participants as the participants themselves are unable to give it themselves. The participants are under 18 years old and due to their mental status they are seen as minors (Mouton, 2001). The parents had to agree to the voluntary participation on behalf of their child or children.

It is important to take note of the sensitivity of gaining the permission of the children (Fargas-Malet, McSherry, Larkin & Robinson, 2010). Previously various techniques have been used to ask the permission of children with learning disabilities as they are seen as vulnerable participants (Fargas-Malet et al., 2010). Due to the sensitivity of asking the child’s permission, an assent form was used in the current study (see Addendum K). The assent form was set up by using a picture, colour and minimal wording. The teachers were asked to

give each learner the page and explain to them that the dog would be visiting. By agreeing to have the dog visit, and ticking the appropriate box, assent was given.

Furthermore, signs of any discomfort the child might have had during the intervention programme were closely observed. Should a child be scared, uninterested in the dog or refused to take part, the researcher would have excused the child from the programme and refer the child to the school psychologist, Ms Chrisna Richards (email: psychologist@altadutoit.co.za). The researcher ensured that the informed consent form given to the parents included stating the anonymity of the information that they gave to the researcher as well as confidentiality of any safety and emergency contact information.

It was the intention of the researcher to maintain the anonymity of all participants in the study (Mouton, 2001). The researcher required to have personal details of the children who participated in the current study. The researcher intended to use this information for conducting the research only and not for reporting any data. The data received from the participants was kept confidential under security key and password which only the researcher has access to. The confidentiality of the participants and the data was maintained by the researcher and can only be asked to do the same by any volunteers and assistants involved in the study.

Participants could withdraw at any time during the research and they had the right to counselling services that were made available to them (Mouton, 2001).One participant felt uncomfortable before the visitation started and withdrew from the study. The learner was immediately dismissed and followed no consequences with regards to the study. If they felt any discomfort or felt the need to receive any additional counselling services, it was the intention of the researcher to provide them access to such services. The school had made their counselling services on the premises available to the study in case of any discomfort. Although it was the teachers who completed the questionnaires, it is important to take note

that it was the learners who received the intervention with the animals. Therefore, if at any point a learner was uncomfortable or disruptive with the animals, withdrawal was implemented accordingly. It was not the intention of the researcher to force any learner or child to be a part of the study against his or her will. In the case of any allergic reactions which might have come to light, the researcher would have assisted the child to the psychologist's office. At the office the child could receive the appropriate medical care and treatment by the school nurse, Sr M Rademeyer (021 903 4178). The researcher also took with extra disinfectant wipes that were used for the learners to wipe their hands after each session.

Volunteers and their dogs from the organisation Pets as Therapy were used. Pets as Therapy is a registered organisation who has all their animals evaluated and assessed with their owners. They are also insured for any risk or injury to them and their animals. The owners of the dogs also had to give consent for the participation of their dogs (see Addendum M). In addition, it is important to also note that animals can often be unpredictable and therefore it is evident that the current study does take on a medium risk threshold. The organisation was required to first evaluate the school in which the intervention would take place before any visitations started. Furthermore, it is also important to take note that the organisation will continue services to the school and all the learners after the intervention took place. The current study applied for animal ethical clearance as well to ensure that the dogs used in the current study were used without doing any harm onto them.

CHAPTER 5

RESULTS

5.1 INTRODUCTION

The aim of the current study was to determine the effect of an AAI on the behaviour of children with intellectual disabilities. The study made use of two questionnaires, namely the CBCL and the MOPI. Both these questionnaires were used to determine whether there were significant changes in attention, communication, rule-breaking behaviour, compliance, aggressive behaviour, physical movement and social behaviour of the children and also whether there were any differences between the experimental and control groups. The questionnaires were completed before and after a 10 week animal-assisted intervention. The following hypotheses were stated to establish whether there had been any changes in the children's behaviours.

Hypothesis 1

A 10-week animal-assisted visitation programme will significantly reduce aggressive behaviour, attention problems, rule-breaking behaviour and social problems as measured by the subscales of the CBCL in children suffering from intellectual disabilities.

Hypothesis 2

A 10-week animal-assisted visitation programme will significantly increase attention span, physical movement, communication and compliance as measured by the subscales of the MOPI in children suffering from intellectual disabilities.

5.2 HYPOTHESIS 1: CHILD BEHAVIOUR CHECKLIST TEACHER'S FORM (CBCL)

5.2.1 Introduction

The teachers completed the CBCL for the pretest and the posttest for the experimental group and the control group. The CBCL consists of 113 items with Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints, Thought Problems, Aggressive Behaviour, Attention Problems, Rule-Breaking Behaviour, Social Problems and Other Problems in children subscales (Achenbach & Rescorla, 2000).

5.2.2 Reliability of the CBCL

Field (2009) noted that a Chronbach's alpha (α) of 0.7 to 0.8 can be valued as acceptable. However, depending on the diversity of some psychological constructs, a value of below 0.7 could also be seen as acceptable (Kline as cited in Field, 2009). If the items on a test are correlated to each other it will increase the α-value (Tavakol & Dennick, 2011). When a questionnaire has a large number of items the reliability of the measure will also be high (above 0.7), but it does not always mean the measure is reliable (Field, 2009).This is because the more items are found on a scale, the α-value will also increase as if forms part of the equation (Field, 2009). The CBCL consists of 113 items which are divided into 9 subscales. For purposes of the current study only 4 subscales with good reliability scores were used, namely aggressive behaviour, attention problems, rule-breaking behaviour and social problems (see Table 5.1).

Table 5.1

Pretest and Posttest Reliability Scores of CBCL Subscales

CBCL Subscale	No. of items	Chronbach's α	
		Pretest (N = 48)	Posttest (N = 47)
AB	18	.95	.95
AP	10	.84	.83
RB	16	.83	.86
SP	11	.64	.73

Note: CBCL = Child Behaviour Checklist; AB = Aggressive Behaviour; AP = Attention Problems; RB = Rule-Breaking Behaviour; SP = Social Problems;

5.2.3 Results of the CBCL

A mixed-model repeated measure analysis of variance (ANOVA) was done to measure differences between the experimental and control group on the CBCL. The mean, standard deviation and confidence intervals of CBCL-subscales are presented in Table 5.2.

With the pretest significant differences ($p < .05$) were found between the experimental group and the control group on rule-breaking behaviour and social problems. With the pretest rule-breaking behaviour of the control group ($M = 7.21$; $SD = 6.86$) had a higher mean score than the experimental group ($M = 3.96$; $SD = 3.28$) with a medium effect size of 0.62. Similarly there was a significant difference between the experimental group ($M = 2.79$; $SD = 1.86$) and control group ($M = 4.42$; $SD = 3.78$) on the social problems subscale. The control group scored a higher mean on the pretest resulting in a medium effect size of 0.62.

Table 5.2

Means (M), Standard Deviation (SD) and Confidence Intervals and Effect sizes of CBCL Subscales: Aggressive Behaviour, Attention Problems, Rule-Breaking Behaviour and Social Problems (N = 47)

Subscales	Group	Time	M	SD	Confidence intervals		Effect sizes
AB	Experimental	Pre	5.38	5.58	3.02	7.73	[4]0.5
		Post	5.74	6.83	2.79	8.69	[5]0.52
	Control	Pre	9.71	11.11	5.02	14.40	0.5
		Post	10.33	10.83	5.76	14.91	0.52
AP	Experimental	Pre	6.25	4.66	4.28	8.22	0.45
		Post	6.13	4.01	4.39	7.87	0.56
	Control	Pre	8.29	4.69	6.31	10.27	0.45
		Post	8.58	4.91	6.51	10.66	0.56
RB	Experimental	Pre	3.96	3.28	2.57	5.34	0.62
		Post	4.22	4.24	2.38	6.05	0.52
	Control	Pre	7.21	6.86	4.31	10.10	0.62
		Post	7.17	6.96	4.23	10.11	0.52

[4] Experimental pre-group to control pre-group effect size

[5] Experimental post-group to control post-group effect size

Table 5.2 *Continued*

Subscales	Group	Time	M	SD	Confidence	intervals	Effect Sizes
SP	Experimental	Pre	2.79	1.86	2.00	3.58	0.56
		Post	2.70	2.44	1.64	3.75	0.62
	Control	Pre	4.42	3.78	2.82	6.01	0.56
		Post	4.71	4.01	3.02	6.40	0.62

Note: CBCL = Child Behaviour Checklist; AB = Aggressive Behaviour; AP = Attention Problems; RB = Rule-Breaking Behaviour; SP = Social Problems

The results of the mixed-model repeated measures analysis of the CBCL will be reported in Table 5.3

Table 5.3

Results of Mixed-Model Repeated Measures ANOVA on the CBCL Subscales: Aggressive Behaviour, Attention Problems, Rule-Breaking Behaviour and Social Problems (N = 47)

Subscales	Effect	*df*	*F*	*p*
AB	Group	1,46	3.27	.08
	Time	1,45	0.45	.51
	Group*Time	1,45	0.04	.85
AP	Group	1,46	3.47	.07
	Time	1,45	0.02	.90
	Group*Time	1,45	0.18	.67
RB	Group	1,46	3.89	.05
	Time	1,45	0.13	.72
	Group*Time	1,45	0.20	.66
SP	Group	1,46	4.75	.03
	Time	1,45	0.07	.79
	Group*Time	1,45	0.26	.61

Note: CBCL = Child Behaviour Checklist; AB = Aggressive Behaviour; AP = Attention Problems; RB = Rule-Breaking Behaviour; SP = Social Problems

According to Table 5.3 significant group main effects were found on the rule-breaking behaviour and social problems subscales ($p<.05$). The significant group main effects on the rule-breaking behaviour and social problem subscales were already found with the pretest. With the posttest a significant mean difference on social problems was found between the experimental group (M=2.70; SD= 2.44) and the control group (M= 4.71; SD= 4.01). No significant main effects for group, time and interaction effect between group and time were

found between the experimental and control groups of aggressive behaviour and attention problems on the CBCL.

5.3 HYPOTHESIS 2: MEASUREMENT OF PET INTERVENTION (MOPI)

5.3.1 Introduction

Before and after the intervention the teachers completed the MOPI which consists of four items namely: attention span, physical movement, communication and compliance (Anderson, 2007). The four items were measured on a 7-point Likert scale, where 7 would be a high indication of the behaviour and 1 would be no indication.

5.3.2 Reliability of MOPI

The MOPI indicated a high reliability both with the pretest (Chronbach's $\alpha = .79$) and the posttest (Chronbach $\alpha = .83$). Aron, Aron and Coups (2009) suggest that a Chronbach's α should generally be between .60 and .90 to be considered a reliable measure. The internal consistency of the MOPI is therefore a good reliable measure.

5.3.3 Results of MOPI

A mixed-model repeated measure analysis of variance (ANOVA) was done to measure differences between the experimental group and control group on the MOPI. The mean, standard deviation and confidence intervals of MOPI subscales are presented in Table 5.4. At pretest no statistically significant results were found between the experimental group and control group on the different items ($p<.05$).

Table 5.4

Means (M), Standard Deviation (SD) and Confidence Intervals of MOPI items: Attention Span, Physical Movement, Communication and Compliance (N = 47)

Subscales	Group	Time	M	SD	Confidence intervals		Effect Sizes
AS	Experimental	Pre	4.38	1.74	3.64	5.11	0.16
		Post	4.09	1.56	3.41	4.76	0.19
	Control	Pre	4.08	2.00	3.24	4.93	0.16
		Post	3.79	1.56	3.13	4.45	0.19
PM	Experimental	Pre	5.33	1.76	4.59	6.08	0.14
		Post	5.35	2.08	4.45	6.25	0.09
	Control	Pre	5.58	1.77	4.84	6.33	0.14
		Post	5.50	1.22	4.99	6.01	0.09
CM	Experimental	Pre	5.38	1.69	4.66	6.09	0.11
		Post	4.83	1.95	3.98	5.67	0.19
	Control	Pre	5.17	2.10	4.28	6.05	0.11
		Post	5.17	1.74	4.43	5.90	0.19
CP	Experimental	Pre	4.67	1.86	3.88	5.45	0.09
		Post	4.65	1.92	3.82	5.48	0.07
	Control	Pre	4.50	2.04	3.64	5.36	0.09
		Post	4.79	2.06	3.92	5.66	0.07

Note: MOPI=Measurement of pet intervention; AS = Attention Span; PM = Physical Movement; CM = Communication; CP = Compliance

The results of the mixed-model repeated measures analysis of the MOPI items will be reported in Table 5.5

Table 5.5

Results of Mixed-Model Repeated Measures ANOVA on the MOPI items: Attention Span, Physical Movement, Communication and Compliance (N = 47)

Subscales	Effect	*df*	*F*	*p*
AS	Group	1,46	0.48	.49
	Time	1,45	1.15	.29
	Group*Time	1,45	0.00003	.99
PM	Group	1,46	0.24	.63
	Time	1,45	0.05	.83
	Group*Time	1,45	0.02	.89
CM	Group	1,46	0.04	.84
	Time	1,45	1.64	.21
	Group*Time	1,45	1.64	.21
CP	Group	1,46	0.0005	.98
	Time	1,45	0.27	.61
	Group*Time	1,45	0.67	.42

Note: MOPI = Measurement of pet intervention; AS = Attention Span; PM = Physical Movement; CM = Communication; CP = Compliance

Table 5.5 indicated no significant main effects for group and time and interaction effect between group and time of the experimental and control groups on attention span, physical movement, communication and compliance of the MOPI.

5.4 CONCLUSION

Chapter 5 elaborated on the results found on the CBCL and the MOPI scales. The results indicated pretest and postest reliability scores for the CBCL subscales, as well as the means, standard deviation, confidence intervals and effect sizes for both the CBCL and

MOPI questionnaires. A further analysis was done to find the results of a mixed-model repeated measures ANOVA for both the CBCL subscales and the MOPI items.

In the following chapter the results will be discussed in detail. Various strengths and limitations for future studies will conclude the chapter.

CHAPTER 6

DISCUSSION

6.1 INTRODUCTION

The previous chapter elaborated on the analysis of the results as indicated by the CBCL and the MOPI questionnaires. In the current chapter the findings of the study, as well as the limitations and strengths that the study holds are discussed.

The aim of the study was to determine the effect that an AAI programme would have on the behaviour, in particular attention span, social problems, communication, rule-breaking behaviour, aggressive behaviour, compliance and physical movement of children with intellectual disabilities. Two questionnaires were completed by the teachers before and after the intervention took place for both a control and an experimental group. The experimental group took part in a 10-week dog visitation programme while the control group continued with their normal daily school activities. Below follows the summary, discussion and conclusion of the findings.

6.2 SUMMARY OF THE CURRENT STUDY

AAI has improved self-esteem, empathy, behavioural and competency of people with physical disabilities (Adams, 2009; Burgon, 2011). AAI has been studied multiple times in different contexts, but studies still indicate that there are future directions to consider. Moreover, studies are needed within a South African context (Lubbe & Scholtz, 2013) and on vulnerable samples such as children with different disabilities (Smith-Osborne & Selby, 2010).

The current study undertook to assess the effect that an animal-assisted intervention programme would have on children with intellectual disabilities.

Previous studies indicated that problem behaviour may improve with the help of AAI. Common problem behaviours associated with ID include substance abuse, being perpetrators of violence, conduct difficulties and self-harming behaviours (Emerson et al., 2011; Wink et al., 2010). Adams (2009) noted that teachers reported increased problem behaviours in learners following an AAI programme. Bassette and Taber-Doughty (2013) noted that target behaviours improved and maintain over time with AAI. On the other hand learners have also previously displayed an increase in social skills and communication with AAI (Bass et al., 2009; Gradin et al., 2010; Keino et al., 2009; Kesner & Pritzer, 2008; Martin & Farnum, 2002). Animal interaction may be seen as a facilitator which provides social support and a catalyst to form new social relations (Adamle et al., 2009; Allen, 2003). According to the biophilia hypothesis, this reaction in which animals are seen as a catalyst for social support and new relations is a natural, innate tendency (Kellert & Wilson, 1993) that all humans have to affiliate and heal through nature in various forms.

Previous results also indicated that AAI may help children pay better attention – even over a longer period of time (Bassette & Taber-Doughty, 2013; Borioni et al., 2012; Martin & Farnum, 2002). Compliance and obedience have also improved in children with various challenges (Adams, 2009; Smith-Osborne & Selby, 2009). This conforms to the current theoretical framework which suggests that if the biophilia hypothesis is true, stagnation in the industry vs inferiority developmental stage should be resolved and mastery synthesis will be achieved. Contrariwise, Ewing et al. (2007) found no changes in the functioning of children with ID. Even though we know from previous research that AAI has potential benefits, studies need to explore the phenomenon under strict empirical methods (Kazdin, 2010)

where control groups, bigger samples and more quantitative methods are used (Heimlich, 2001; Smith-Osborne & Selby, 2010).

The current research study was carried out using a pretest-posttest control group design. After the pretest the learners were randomly assigned to a control group and an experimental group. The experimental group received a 10-week intervention during which PAT volunteers and dogs came to visit them once a week at school, while the control group continued with their normal class activities. Teachers were asked to complete two questionnaires for each learner in both groups before and after the 10-week intervention took place. Teachers were also asked to not be in the room where the AAI programme was taking place, and therefore they continued with their normal daily teachings in the classrooms.

6.3 DISCUSSION AND FINDINGS

Previous studies indicated significant results with AAI for reducing problem behaviour in children with disabilities. This study looked at reducing aggressive behaviour, attention problems, rule-breaking behaviour, social problems and other problems such as compliance and physical movement. The study also aimed to increase positive behaviour such as attention span, physical movement, communication and compliance within the sample. Below the discussions of these findings will follow.

6.3.1 Hypothesis 1: CBCL (teacher's form)

The current study specifically made use of a randomizer program which had randomly assigned the two groups, giving each learner an equal opportunity to be in either group without the subjectivity of the researcher playing a role. Therefore, no individual selection was used to ensure equal behavioural means between the experimental group and control group at pretest, making the study more robust.

The CBCL measured aggressive behaviour, attention problems, rule-breaking behaviour and social problems in the sample. Results indicated non-significant findings on the aggressive behaviour and attention problems subscales of the CBCL. A significant result was found on rule-breaking behaviour and social problems. It is however vital to note that the significant results could be due to significant differences between the experimental group and control groups at pretest.

These findings suggest that the experimental group and control group differed significantly on rule-breaking behaviour and social problems before the intervention took place. Symptoms such as rule-breaking behaviour could be viewed as partial to stagnation in their developmental period (Eccles, 1999). It is important to note the sample in the current study have great difficulty with reaching mastery in tasks, therefore they struggle with inferiority over industry (Sadock & Sadock, 2007). Thus, it was hypothesised that a natural tendency to affiliate with nature (biophillia) would accommodate in helping the learners reach synthesis in their developmental stage. With this in mind, it's noted that children with ID have a variety of behavioural, and cognitive symptoms with different levels of severity (Sadock & Sadock, 2007). The finding on rule-breaking behaviour suggests that the control group displayed significantly more rule-breaking behaviour than the experimental group before the study took place.

The control group in the current study was also older (M = 11.27) than the experimental group (M = 10.95). This suggested that the control group had been in the school setting longer than the experimental group and not progressed in their current developmental stage. On the other hand, it also suggests the control group was entering into the next developmental phase, namely puberty and adolescents for which the synthesis is autonomy. This is the stage during which young adults learn more about themselves and define new behaviours (Sadock & Sadock, 2007).

Results of the CBCL is further found to be inconsistent with current literature which indicates that AAI can improve targeted behaviours (Adams, 2009; Burgon, 2011; Holm et al., 2014; Kemp et al., 2014). Kemp et al. (2014) specifically looked at behaviour such as non-compliance, aggressive behaviours and hyperactivity on the CBCL. They found significant results after THR in children who have been sexually abused. The current study is further also inconsistent with Kesner and Pritzer (2008) who found that children in foster care experienced better social interaction and improved behaviour toward others after THR.

There could be a variety of reasons for the differences found at pretest. A further reason could also be the different percentage teachers to the experimental and control groups. According to Table 4.1 three teachers had 50% of their learners in the experimental group and 50% of learners in the control group. The other three teachers had a variety of either more learners in the control group or more in the experimental group. As a result one can note that there could have been a large difference in the manner in which the teachers completed the questionnaires of the learners in the different groups. Further, the teachers had between 4 and 11 questionnaires to complete for their classes – one had 4 questionnaires and another had 11. Thus indicating different lengths in time it took for teachers to complete questionnaires and more chance of fatigue when answering the questionnaires.

According to the current findings there is a significant difference in means between the two groups on two of the subscales at pretest. Significant differences between groups at pretest, would therefore have affected the results at posttest. Other research has also found that results are not always conclusive on social behaviour subscales whereas significant findings will be on other subscales such as self-esteem, physical development and confidence (Surujlal & Rufus, 2011). It therefore suggests that social skills do not always improve after AAI.

No significant evidence was found which suggests that attention problems, rule-breaking behaviour and social problems improved after a 10-week visitation programme. It is thus concluded that the hypothesis stating: *There will be a significant difference between children in the experimental group and control group on behavioural problems after a 10-week visitation programme* is dismissed.

6.3.2 Hypothesis 2: MOPI

The teachers completed the MOPI for every learner before and after the intervention took place. The MOPI consists of four items, namely: attention span, physical movement, communication and compliance. Results on all four items were found to be non-significant between the experimental and control groups.

The non-significant results of the current study could be due to a variety of factors, such as the length of the programme and where the programme took place. These factors were not directly taken into account during pretest and posttest. Surujlal and Rufus (2011) did a qualitative study on learners who had been involved in THR for 3 to 5 years, and Rinquest (2011) collected data over a period of two years. Bronkhorst (2006) on the other hand had 5 sessions with one participant from whom she had drawn her conclusions. This is a dramatic difference from the current study which had an intervention over a period of 10 weeks with 23 learners. The suggestion is therefore that a further investigation should be done on the length of the programme and impact thereof on the outcome of an AAI programme.

Further contextual factors such as where the intervention took place as well as the animals used should also be taken into account when reporting and discussing the results. Studies such as Bronkhorst (2006), De Villiers (2004) and Surujlal and Rufus (2011) all made use of THR which encourages children to be outdoors riding, interacting and having personal time with a horse. The current study made use of dogs within a classroom setting where the

spaces are more confined and less intimate as there are other learners too. Future studies should thus take into account contextual factors such as the time, the place where a study takes place and the type of animals used as children could be more fearful of some animals than others.

Surujlal and Rufus (2011) found that children with ID had improved physical development, self-esteem and confidence after THR, whereas Rinquest (2011) found that autistic children had better attention span and physical orientation following AAT. Similarly Bronkhorst (2006) found improvements in non-verbal communication and De Villiers (2004) found improvements in mastery, awareness and attention-span following THR. Knight and Edwards (2008) indicated that human-animal companionship will increase exercise and movement. The current study, however, found no significant results on the physical movement item of the MOPI.

ID is a complex diagnosis which more often than not includes a variety of other co-morbid medical and psychological diagnoses (Sadock & Sadock, 2007). In the current study the following co-morbid diagnoses existed in the experimental group: ADHD, Cerebral Palsy, Sotas Syndrome, FAS, Angelman syndrome and Lennox Gastaut. In the control group the following diagnoses existed: ADHD, Cerebral Palsy, Down's syndrome, Epilepsy and Williams syndrome. All of these have different presentations and symptoms in the diagnosis. According to Sadock and Sadock (2007) common treatments for diagnoses include attention focusing medications, mood stabilisers and anti-anxiety or antipsychotic medications. Often these medications are also used to reduce challenging behaviours in individuals with ID (McQuire et al., 2015). One can assume that medication could effectively have interfered with the results of the current study as the learners were already taking their medications before, during and after the intervention. The medications could therefore have altered the responses of the learners as it is known to contain behaviours of learners. This would then

suggest that mind-altering stimulants such as the medications used for attention, mood, anxiety and psychosis interfere with a natural tendency for humans to affiliate with nature. The biophilia hypothesis, which in effect would enable the learners to reach mastery of tasks such as compliance, having better attention span, better communication or physical movement, can therefore not be applied in the current context.

A further factor which is vital to take into account is the male to female ratio of the sample. The experimental group in the current sample had a male to female ratio of 1.875:1 and the control group had a male to female ratio of 0.846:1. The experimental group is closely related to South African prevalence which indicated a male to female ratio of 3:2 (Christianson et al., 2002). Young et al. (2012) found that staff members' perceptions differ depending on the gender of the person with ID. The suggestion is that men with ID are more inclined toward sexual tendencies and motivations and women with ID are perceived as more innocent in this aspect (Young et al., 2012). If this is found to be true, it could suggest that teachers would complete the questionnaires differently depending on the gender of the learner, which in effect could alter the results. If it is true that men are found to be more sexual than women, then it would further suggest differences in the severity of symptoms between the genders. In the global general population the male to female ratio of severe ID is 1.2:1 and of mild ID 1.6:1 (APA, 2013). Van den Hout and Bragonje (2010) noted the importance of the severity of the symptoms and the effect thereof on significant results.

6.4 OUTCOME AND STRENGHTS OF THE STUDY

The current study found non-significant results, however, there are strengths to the methodology and study as a whole which could be noted.

- The current study made use of a research randomizer program to create two equal groups – an experimental group and a control group.

- The current study made use of a control group which allows for comprehensive comparison between an experimental group and a control group to ensure the effectiveness of the intervention.
- A pretest was used prior to the intervention which ensured that there was a baseline to compare both the experimental group and the control group.
- Posttests of both the control group and the experimental group were used to compare the baselines of the experimental group and the control group.
- No self-report measurements were used as the current study ensured that questionnaires were completed by a third person who had no vested interest in the intervention.
- By making use of quantitative data, the analysis ensured that less biased conclusions were formed as compared to qualitative data.
- This study adds to current literature on AAI and ID in a South African setting, which is found to be very limited.
- The current study made use of a reliable organisation, PAT, which ensures protocols for animal-interventions are adhered to at all times.
- The study further made use of a diverse breed of dogs, both big and small, to which everyone in the experimental group was exposed to.
- The data was analysed by an external source with no interest in the outcome of the study.
- The questionnaires used in the current study are regarded as valid and reliable measures (see Chapter 4).
- The study ensured consistency in the intervention times and place.

- The current study ensured the safety and health of the children and the dogs at all times.

6.5 LIMITATIONS

Limitations are important to note in a study as this would help future studies to improve their methodology and refine the research as a whole. The current study also holds many limitations.

6.5.1 Pretest analysis of data

The current study collected data with a pretest prior to randomly assigning the experimental group and the control group. The current study did not analyse the pretest data which would have revealed the mean differences after random assignment. This could have been corrected by changing the participants in the groups so that they were equally divided. Re-testing for significant mean differences could ensure that the groups were the same.

6.5.2 Duration of intervention

Previous studies had 5 sessions (Bronkhorst, 2006) or had longitudinal studies over a period of a few years (Rinquest, 2011; Surujlal and Rufus, 2011). The current study had a 10-week intervention programme, which is considered a limitation as the duration of the intervention could have an effect on the results of the study. Perhaps longer studies would have a better effect on the behaviour of children with ID.

6.5.3 Lack in generalisation

The current study made use of a small sample of 47 learners from a community in South Africa. Furthermore, the study could be considered limited as it only pertains to children with intellectual disabilities. Therefore, the current study cannot be generalised to a bigger population.

6.5.4 Limited biographical information

The biographical information clearly indicated that 28 out of a total of 47 children did not have any pets at home, indicating the limited prior exposure they had to dogs and other animals. Children with prior experience of dogs and different attachments to those dogs would react differently compared to someone who has no experience. Further, little information is known about the parents and the environment the children find themselves in before and after school.

6.5.5 Social desirability

The concept of social desirability suggests that individuals would answer questions in a desirable manner. In the current study the teachers completed the questionnaires. It could therefore suggest that the questionnaires were not done in an objective manner as the teachers knew the learners' background, they might have had personal relationships with the learners, and they knew the learners in a social context at the school.

6.5.6 Limited knowledge of control group

The current study did not take the time to investigate the activities of the control group during the time of the intervention. Dodd (2010) noted that individuals that take part in meaningful but failure-free activities will reduce stress, encourage good behaviour and improve mood and well-being.

6.5.7 Fluctuation in attendance of experimental group

The experimental group had 23 learners who took part in a 10-week animal-visitation programme. During those 10 weeks some learners were absent from sessions.

6.5.8 Lack of qualitative data

No qualitative data was collected in the current study. A quantitative design was used in which two questionnaires were completed by the teachers. As a result the analysis indicated only statistical results. The current study did not consider making use of qualitative data which would include interviews and focus groups with the teachers, the teachers' assistants, the volunteers and the learners themselves.

6.5.9 Contamination between groups

It is expected that there would be contamination amongst the control group and the experimental group. Learners between the ages of 10 and 12 are expected to be eager to tell their peers about new experiences, especially something which is exclusive. This tendency can be related to their current developmental stage, industry vs inferiority. In being able to partake in a dog-visitation programme, which their peers may not, the learners have a better sense of mastery over their peers. Mastery is seen as the synthesis which is reached in the industry vs inferiority stage of Erikson's developmental theory (Sadock & Sadock, 2007).

6.5.10 No follow-up questionnaires

The current study did not do any follow-up measures after the posttest. Follow-up measures would be able to indicate the longer term effects that the intervention may have had on the experimental group and control group. Follow-up measures can indicate whether an AAI had an effect on the behaviour of children with intellectual disability 6 months to 12 months after the intervention had taken place. Bassette and Taber-Doughty (2013) found that AAI effects are maintained over longer terms, which could only be found with follow-up assessments.

6.5.11 History and control over the two groups

Medication and dosages were not monitored throughout the study. Fluctuation in behaviour or the lack of fluctuation could be due to changes which the medication can cause in the learners. The study also had little control over the time the learners received their medication as well as the side effects thereof. It is important to take into account that mind-altering medication will change the behaviour of children. It could in effect have changed the learners' responses to the AAI. Little is also known about other treatments which the learners might be receiving, such as counselling, speech therapy or other recreational activities after school. These activities could in essence have caused changes in the results of both the experimental group and the control group.

6.5.12 Limited objectivity of answers on the questionnaires

Although the current study kept the personal details of each learner confidential, the teachers could derive which learners received the intervention and which learners did not. As a result the teachers expected a level of change in the learners and completed the questionnaires with this in mind. The teachers completed the questionnaires knowing which learners were in the control group, whom they spent more time with during the intervention hour. They spent less time and had less knowledge about the experimental group and their activities during the intervention sessions.

Although the study has various strengths and limitations, future studies should take into account both the strengths and limitations of the current study to improve their results. In the next section are recommendations for future studies.

6.6 RECOMMENDATIONS

Although the current study did not reveal any significant results, it is still considered a successful study as it adds to the body of literature on the topic of AAI and ID within a South

African context. The following recommendations are made to ensure future studies continue to add to this growing research field.

- It is recommended that future studies consider running an AAI programme over a longer period of time to increase the chances of having significant results.
- The current study recommends that future studies continue to use rigorous scientific research methods such as multiple experimental groups and control groups, and incorporate qualitative methods to study the effects that AAI has on children with ID.
- Future studies should warrant that the data is collected from a reliable source closely related to the individual with ID. Both teachers and parents should be included in order to better understand the effect of AAI on children with ID.
- Researchers should ensure that they rigorously analyse the demographical information and consider the impact which medications can have on the emotional and cognitive state of the sample.
- Studies should further include the use of both qualitative and quantitative methods. In using both qualitative and quantitative methods studies would be able to establish the statistical significance as well as individual observable changes in the sample.
- Continuous studies in this field are highly recommended to add to the current literature especially in a South African context.
- Previous studies indicated the importance of structure (Sturmey, n.d.) and FCT (Chezan et al., 2014) and how it has been considered effective in reducing challenging behaviour in children with ID. It is therefore recommended that future studies in ID and AAI consider the methods used in FCT and how such functional training and structure or routine could be incorporated into an AAA programme.

6.7 CONCLUSION

Previous studies indicated both significant and non-significant results in AAI with children with ID. More studies are needed within a South African context, particularly sampling disabled and vulnerable populations. Previous studies lacked the use of scientific methodology where more rigid designs are used, hence the current research studied children with intellectual disability in South Africa and made use of a pretest-posttest control group design.

The sample in the current study consisted of 47 learners of which 23 learners were in the experimental group and 24 learners were in a control group. Both groups were tested prior to (pretest) and after (posttest) the 10-week dog visitation programme. Results on the CBCL subscales indicated non-significant differences in attention span, rule-breaking behaviour, communication, social skills, compliance, aggressive skills and physical movement. These results are consistent with prior research which also found non-significant results in children's functioning (Ewing et al., 2007).

Regardless of the non-significant results found in the current study, there are a variety of strengths on which the study was grounded (see 6.4). The current study also yielded limitations which future studies could take into account and improve on (see 6.5).

With these strengths and limitations in mind future studies should consider the recommendations formed from the current study to improve research in the field of AAI and children with ID. Future studies should ensure that larger sample sizes are used, taking both qualitative and quantitative methods into account to study the samples. Future studies should also get complete information on the sample's medical and family history and living conditions. Rigorous scientific research methods which can be replicated in other studies are recommended. Protocols and safety measures are imperative when incorporating dogs in an intervention with children. Lastly, the current study recommends that future studies continue

to endeavour the field of animal interventions with specific regard to intellectual disabilities in South Africa (Lima, et al., 2012; Lubbe & Scholtz, 2013).

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Addendum A (APA, 2013, p. 33)

Intellectual Disability

Intellectual disability (intellectual developmental disorder) is a disorder with onset during the developmental period that includes both intellectual and adaptive functioning deficits in conceptual, social, and practical domains. The following three criteria must be met:

A. Deficits in intellectual functions, such as reasoning, problem solving, planning, abstract thinking, judgment, academic learning, and learning from experience, confirmed by both clinical assessment and individualized, standardized intelligence testing.

B. Deficits in adaptive functioning that result in failure to meet developmental and socio-cultural standards for personal independence and social responsibility. Without ongoing support, the adaptive deficits limit functioning in one or more activities of daily life, such as communication, social participation, and independents living, across multiple environments, such as home, school, work, and community.

C. Onset of intellectual and adaptive deficits during the developmental period.

Note: The diagnostic term *intellectual disability* is the equivalent term for the ICD-11 diagnosis of *intellectual developmental disorders*. Although the term *intellectual disability* is used throughout this manual, both terms are used in the title to clarify relationships with other classification systems. Moreover, a federal statute in the United States (Public Law 111-256, Rosa's Law) replaces the term *mental retardation* with *intellectual disability,* and research journals use the term *intellectual disability*. Thus, *intellectual disability* is the term in common use by medical, educational, and other professions and by the lay public and advocacy groups.

Coding note: The ICD-9-CM code for intellectual disability (intellectual developmental disorder) is **319**, which is assigned regardless of the severity specifier. The ICD-10-CM code depends on the severity specifier (see below).

Specify current severity (see Table 1):

Table 1

Severity Levels for Intellectual Disability (intellectual developmental disorder (APA, 2013, p.36)

Severity level	**Conceptual domain**	**Social domain**	**Practical domain**
Mild	For preschool children, there may be no obvious conceptual differences. For school-age children and adults, there are difficulties in learning academic skills involving reading, writing, arithmetic, time, or money, with support needed in one or more areas to meet age-related expectations. In adults, abstract thinking, executive functioning (i.e., planning, strategizing, priority setting, and cognitive flexibility), and short-term memory, as well as functioning use of academic skills (e.g., reading, money management), are impaired. There is somewhat concrete approach to problems and solutions compared with age-mates	Compared with typical developing age-mates, the individual is immature in social interactions. For example, there may be difficulty in accurately perceiving peers' social cues. Communication, conversation, and language are more concrete or immature than expected for age. There may be difficulties regulating emotion and behaviour in age-appropriate fashion; these difficulties are noticed by peers in social situations. There is limited understanding of risk in social situations; social judgement is immature for age, and the person is at risk of being manipulated by others (gullibility).	The individual may function age-appropriately in personal care. Individuals need some support with complex daily living tasks in comparison to peers. In adulthood, supports typically involve grocery shopping, transportation, home and child-care organizing, nutritious food preparation, and banking and money management. Recreational skills resemble those of age-mates, although judgement related to well-being and organization. Around recreation requires support. In adulthood, competitive employment is often seen in jobs that do not emphasize conceptual skills. Individuals generally need support to make health care decisions and legal decisions, and to learn to perform a skills vocation competently. Support is typically needed to raise a family.

Moderate	All through development, the individual's conceptual skills lag markedly behind those of peers. For preschoolers, language and pre-academic skills develop slowly. For school-age children, progress in reading, writing, mathematics and understanding of them and money occurs slowly across the school years and is markedly limited compared with that of peers. For adults, academic skill development is typically at an elementary level, and support is required for all use of academic skills in work and personal life. Ongoing assistance on a daily basis is needed to complete conceptual skills of day-today-life, and others may take over these responsibilities fully for the individual.	The individual shows marked differences from peers in social and communicative behaviour across development. Spoken language is typically a primary tool for social communication but is much less complex than that of peers. Capacity for relationships is evident in ties to family and friends, and the individual may have successful friendships across life and sometimes romantic relations in adulthood. However, individuals may not perceive or interpret social cues accurately. Social judgement and decision-making abilities are limited, and caretakers must assist the person with life decisions. Friendships with typically developing peers are often affected by communication or social limitations. Significant social and communicative support is needed in work settings for success.	The individual can care for personal needs involving eating, dressing, elimination, and hygiene as an adult, although an extend period of teaching and time is needed for the individual to become independent in these areas, and reminders may be needed. Similarly, participation in all household tasks can be achieved by adulthood, although an extended period of teaching is needed, and ongoing supports will typically occur for adult-level performance. Independent employment in jobs that require limited conceptual and communications kills can be achieved, but considerable support from co-workers, supervisors, and others is needed to manage social expectations, job complexities, and ancillary responsibilities such as scheduling, transportation, health benefits, and money management. A variety of recreational skills can be developed. These typically require additional supports and learning opportunities over an extended period of time. Maladaptive behavior is present in

			a significant minority and causes social problems.
Severe	Attainment of conceptual skills is limited. The individual generally has little understanding of written language or of concepts involving numbers, quantity, time, and money. Caretakers provide extensive supports for problem solving throughout life.	Spoken language is quite limited in terms of vocabulary and grammar. Speech may be single words of phrases and may be supplemented through augmentative means. Speech and communication are focused on the there and now within everyday events. Language is used for social communication and more than for explication. Individuals understand simple speech and gestural communication. Relationships with family members and familiar others are a source of pleasure and help.	The individual requires support for all activities of daily living, including meals, dressing, bathing, and elimination. The individual requires supervision at all times. The individual cannot make responsible decisions regarding well-being of self or others. In adulthood, participation in tasks at home, recreation, and work requires ongoing support and assistance. Skill acquisition and all domains involve long term teaching and ongoing support. Maladaptive behaviour, including self-injury, is present in a significant minority.
Profound	Conceptual skills generally involve the physical world rather than symbolic processes. The individual may use objects in goal-directed fashion for self-care, work, and recreation. Certain visuospatial skills, such as matching and sorting based on physical characteristics, may be acquired. However, co-occuring motor and sensory impairments may	The individual has very limited understanding of symbolic communication in speech or gesture. He or she may understand some simple instructions or gestures. The individual expresses his or her own desires and demotions largely through nonverbal, nonsymbolic communication. The individual enjoys	The individual is dependent on others for all aspects of daily physical care, health and safety, although he or she may be able to participate in some of these activities as well. Individuals without severe physical impairments may assist with some daily work tasks at home, like carrying dishes to the table. Simple actions with objects may be the

	prevent functional use of objects.	relationships with well-known family members, caretakers, and familiar others, and initiates and responds to social interactions through gestural and emotional cues. Co-occuring sensory and physical impairments may prevent many social activities.	basis of participation in some vocational activities with high levels of ongoing support. Recreational activities may involve, for example, enjoyment in listening to music, watching movies, going out for walks, or participating in water activities, all with the support of others. Co- occuring physical and sensory impairments are frequent barriers to participation (beyond watching) in home, recreational, and vocational activities. Maladaptive behaviour is present in a significant minority.

(F70) Mild

(F71) Moderate

(F72) Severe

(F73) Profound

Addendum B:

Demographic Questionnaire / Demografiese vraelys

Name of learner/ Naam van leerder:

_____

Age / Ouderdom: _____

Gender / Geslag: _____

Grade / Graad: _____

Primary diagnosis / Primêre diagnose:

_____

_____

Secondary diagnosis / Sekondêre diagnose:

_____

_____

Allergies / Allergieë:

_____

_____

Current medication / Huidige medikasie:

_____

_____

Race / Ras: _____

Language / Taal): _____

Number of children in the household / Aantal kinders in die huishouding:

_____

Any pets at home / Enige troeteldiere by die huis:

_____

If yes, how many / Indien well, hoeveel?

_____

Addendum C:

Enriching lives through animal-companionship

Pets as Therapy

South Africa

PAT

23 June 2014

Khama Diergaardt
Stellenbosch University
Student number: 15801233

Dear Khama

PERMISSION DO TO RESEARCH: MA Research Psychology (Thesis)

On behalf of the Pets as Therapy (PAT) it is our pleasure to grant you permission to conduct your research "*The perceived effect of an animal-assisted visitation program on children with severe intellectual disabilities (SID): A randomised controlled study*", in cooperation with Pets as Therapy.

Please remember that our members are volunteers and that they are giving their time for this project on a voluntary basis. They do have to work according to PAT rules and the rules of any of the facilities that they visit, in this case Alta du Toit school. We do need a copy of your final research proposal, consent forms and ethical clearance for our records purposes.

On behalf of PAT, we wish this initiative much success and look forward to regular progress reports as well as a copy of your final thesis.

Yours sincerely

Bronwynn Douglas
Vice-Chair

Registered address: Suite 127, Private Bag x26, Tokai, 7966
NPO 024 153 / PBO 930004216
www.pat.org.za | info@pat.org.za

Addendum D:

Measurement of Pet Intervention (MOPI)

Teacher: _____

Date: _____

Child: _____

Please rate the child on the following behaviours based on your interactions with the child. You are being asked to rate the child's behaviour on a 7-point Likert scale where:

1 = no evidence of this behaviour

7 = strong evidence of this behaviour

Please circle the corresponding number:

	No evidence						Strong evidence
Attention span	1	2	3	4	5	6	7
Physical movement	1	2	3	4	5	6	7
Communication	1	2	3	4	5	6	7
Compliance	1	2	3	4	5	6	7

Attention span: This involves attention and concentration, as well as "time on task" for a particular activity; the uninterrupted time the child devotes to an activity until being distracted.

Physical movement: This involves both gross and fine motor skills, and encompasses mobility, task-orientated movement; observably intentional movement by the child.

Communication: This involves verbal expression only; observably intentional attempts to communicate verbally by the child.

Compliance: This involves the child's following directions both implicit and direct; the completion of assigned tasks.

Comments:_____

_____

Meting van troeteldierintervensie (MVTI)

Onderwyser: _____

Datum: _____

Leerder: _____

Beoordeel asseblief die kind volgens die volgende voorbeelde van gedrag, op grond van u interaksie met die kind. U word gevra om die kind se gedrag volgens ’n 7-punt Likert-skaal te skat waar:

1 = geen aanduiding van die gedrag nie

7 = sterk aanduiding van die gedrag

Omkring asseblief die toepaslike syfer:

	Geen aanduiding						Sterk aanduiding
Aandagspan	1	2	3	4	5	6	7
Fisieke beweging	1	2	3	4	5	6	7
Kommunikasie	1	2	3	4	5	6	7
Inskiklikheid	1	2	3	4	5	6	7

Aandagspan: Dit behels aandag en konsentrasie, en “tyd met taak” vir ’n bepaalde aktiwiteit, die ononderbroke tyd wat die kind aan die aktiwiteit wy tot die aandag afgelei word.

Fisieke beweging: Dit behels beide groot- en fynmotoriese vaardighede en sluit in: beweeglikheid, taakgerigte beweging, merkbaar doelbewuste beweging deur die kind.

Kommunikasie: Dit behels slegs verbale uitrukking; merkbaar doelbewuste pogings van die kind om verbaal te kommunikeer.

Inskiklikheid: Dit behels die volg van aanwysings, beide onuitgesproke en soos voorgeskryf, die voltooiing van take.

Opmerkings:_____

_____

Addendum E:

Child Behaviour Checklist (Teacher's Form)

TEACHER'S REPORT FORM FOR AGES 6-18

Your answers will be used to compare the pupil with other pupils whose teachers have completed similar forms. The informationfrom this form will also be used for comparison with other information about this pupil. Please answer as well as you can, even if you lack full information. Scores on individual items will be combined to identify general patterns of behaviour. Feel free to print additional comments beside each item. Please answer all items.

Below is a list of items that describe learners. For each item that describes the learner ***now or within the past two months***, please circle the **2** if the item is ***very true* or *often true*** of the learner. Circle the **1** if the item is ***somewhat* or *sometimes true*** of the learner. If the item is ***not true*** of the learner, circle the **0**. Please answer all the items as well as you can, even if some do not seem to apply to this learner.

0 = Not true (as far as you know)

1 = Somewhat or Sometimes true

2 = Very true or Often true

	Not true		Very true
1. Acts too young for his/her age	0	1	2
2. Hums or makes other odd noises in class	0	1	2
3. Argues a lot	0	1	2
4. Fails to finish things he/she starts	0	1	2
5. There is very little that he/she enjoys	0	1	2
6. Defiant, talks back to staff	0	1	2
7. Bragging, boasting	0	1	2
8. Can't concentrate, can't pay attention for long	0	1	2
9. Can't get his/her mind off certain thoughts; obsessions: ***Describe***	0	1	2
10. Can't sit still, restless, or hyperactive	0	1	2
11. Clings to adults or too dependent	0	1	2
12. Complains of loneliness	0	1	2
13. Confused or seems to be in a fog	0	1	2
14. Cries a lot	0	1	2
15. Fidgets	0	1	2

	Not true		Very true
16. Cruelty, bullying, or meanness to others	0	1	2
17. Daydreams or gets lost in his/her thoughts	0	1	2
18. Deliberately harms self or attempts suicide	0	1	2
19. Demands a lot of attention	0	1	2
20. Destroys his/her own things	0	1	2
21. Destroys property belonging to others	0	1	2
22. Difficulty following directions	0	1	2
23. Disobedient at school	0	1	2
24. Disturbs other learners	0	1	2
25. Doesn't get along with other learners	0	1	2
26. Doesn't seem to feel guilty after misbehaving	0	1	2
27. Easily jealous	0	1	2
28. Breaks school rules	0	1	2
29. Fears certain animals, situations, or places other than school. ***Describe***	0	1	2
30. Fears going to school	0	1	2
31. Fears he/she might think or do something bad	0	1	2
32. Feels he/she has to be perfect	0	1	2
33. Feels or complains that no one loves him/her	0	1	2
34. Feels others are out to get him/her	0	1	2
35. Feels worthless or inferior	0	1	2
36. Gets hurt a lot, accident-prone	0	1	2
37. Gets in many fights	0	1	2
38. Gets teased a lot	0	1	2
39. Hangs around with others who get in trouble	0	1	2
40. Hears sounds or voices that aren't there. ***Describe***	0	1	2
41. Impulsive or acts without thinking	0	1	2
42. Would rather be alone than with others	0	1	2
43. Lying or cheating	0	1	2
44. Bites fingernails	0	1	2
45. Nervous, high-strung, or tense	0	1	2
46. Nervous movements or twitching. ***Describe***	0	1	2
47. Over conforms to rules	0	1	2
48. Not liked by other pupils	0	1	2
49. Has difficulty learning	0	1	2
50. Too fearful or anxious	0	1	2
51. Feels dizzy or lightheaded	0	1	2

	Not true		Very true
52. Feels too guilty	0	1	2
53. Talks out of turn	0	1	2
54. Overtired without good reason	0	1	2
55. Overweight	0	1	2
56. Physical problems ***without known medical cause:***	0	1	2
a. Aches and pains (**not** stomach or headaches)	0	1	2
b. Headaches	0	1	2
c. Nausea, feels sick	0	1	2
d. Eye problems (**not** if corrected by glasses). ***Describe***	0	1	2
e. Rashes or other skin problems	0	1	2
f. Stomach aches	0	1	2
g. Vomiting, throwing up	0	1	2
h. Other (describe)	0	1	2
57. Physically attacks people	0	1	2
58. Picks nose, skin or other parts of body. ***Describe***	0	1	2
59. Sleeps in class	0	1	2
60. Apathetic or unmotivated	0	1	2
61. Poor school work	0	1	2
62. Poorly coordinated or clumsy	0	1	2
63. Prefers being with older children or youths	0	1	2
64. Prefers being with younger children	0	1	2
65. Refuses to talk	0	1	2
66. Repeats certain acts over and over; compulsions. ***Describe***	0	1	2
67. Disrupts class discipline	0	1	2
68. Scrams a lot	0	1	2
69. Secretive, keeps things to self	0	1	2
70. Sees things that aren't there. ***Describe***	0	1	2
71. Self conscious or easily embarrassed	0	1	2
72. Messy work	0	1	2
73. Behaves irresponsibly. ***Describe***	0	1	2
74. Showing off or clowning	0	1	2
75. Too shy or timid	0	1	2
76. Explosive and unpredictable behaviour	0	1	2

	Not true		Very true
77. Demands must be met immediately, easily frustrated	0	1	2
78. Inattentive or easily distracted	0	1	2
79. Speech problem. ***Describe***	0	1	2
80. Stares blankly	0	1	2
81. Feels hurt when criticized	0	1	2
82. Steals	0	1	2
83. Stores up too many things he/she doesn't need. ***Describe***	0	1	2
84. Strange behaviour. ***Describe***	0	1	2
85. Strange ideas. ***Describe***	0	1	2
86. Stubborn, sullen or irritable	0	1	2
87. Sudden changes in mood or feelings	0	1	2
88. Sulks a lot	0	1	2
89. Suspicious	0	1	2
90. Swearing or obscene language	0	1	2
91. Talks about killing self	0	1	2
92. Underachieving, not working up to potential	0	1	2
93. Talks too much	0	1	2
94. Teases a lot	0	1	2
95. Temper tantrums or hot temper	0	1	2
96. Seems preoccupied with sex	0	1	2
97. Threatens people	0	1	2
98. Tardy to school or class	0	1	2
99. Smokes, chews, or sniffs tobacco	0	1	2
100. Fails to carry out assigned tasks	0	1	2
101. Truancy or unexplained absence	0	1	2
102. Underactive, slow moving, or lacks energy	0	1	2
103. Unhappy, sad or depressed	0	1	2
104. Unusually loud	0	1	2
105. Uses alcohol or drugs for nonmedical purposes (**DO NOT** include tobacco). ***Describe***	0	1	2
106. Overly anxious to please	0	1	2
107. Dislikes school	0	1	2
108. Is afraid of making mistakes	0	1	2
109. Whining	0	1	2
110. Unclean personal appearance	0	1	2

	Not true		Very true
111. Withdrawn, doesn't get involved with others	0	1	2
112. Worries	0	1	2
113. Please write any problems the learner has that were not listed above			

Child Behaviour Checklist (Afrikaans)

ONDERWYSERSVORM VIR OUDERDOM 6-18 jaar oud

Hieronder is n lys van items wat kinders beskryf. Merk asseblief die **2** indien die item die kind se gedrag ***tans en die laaste ses maande beskryf*** en ***indien dit baie waar is of meestal waar is***. Merk **1** indien die item ***soms van toepassig*** op die kind is. Indien die item ***nie van toepassing*** op die kind is nie merk dan **0**. Beantwoord asseblief al die items so goed soos u kan al blyk dit dat sommiges nie van toepassing op die kind is nie.

0 = Onwaar (sover u kennis strek)
1 = Soms waar
2 = Baie waar of meestal waar

	Onwaar	Soms waar	Baie waar of meestal waar
1. Gedrag/optrede te jonk vir sy/haar ouderdom.	0	1	2
2. Brom of maak snaakse geluide in die klas	0	1	2
3. Redekawel/ argumenteer baie	0	1	2
4. Voltooi nie wat hy/sy begin nie	0	1	2
5. Daar is baie min wat hy/sy geniet	0	1	2
6. Uittartend, praat terug met personeel	0	1	2
7. Spog/grootpratery/windmakerig	0	1	2
8. Kan nie konsentreer nie/kan nie lank aandag bepaal by iets nie	0	1	2
9. Ondervind probleme om gedagtes weg te kry van sekere onderwerpe. ***Beskryf***	0	1	2
10. Kan nie stil sit nie, is rusteloos of hiperaktief	0	1	2
11. Klou aan volwassenes, is te afhanklik	0	1	2
12. Kla oor alleenheid	0	1	2
13. Verward of blyk afwesig te weees	0	1	2
14. Huil baie	0	1	2
15. Vroetel	0	1	2

	Onwaar	Soms waar	Baie waar of meestal waar
16. Wreed, afknouerig of gemeen teenoor ander	0	1	2
17. Dagdroom of raak weg in sy/haar eie gedagtes	0	1	2
18. Beseer opsetlik hom/haarself of poog selfmoord	0	1	2
19. Eis/dring aan op baie aandag	0	1	2
20. Verniel sy/haar eie besittings	0	1	2
21. Verniel sy/haar gesin en ander kinders se besittings	0	1	2
22. Kan nie rigting volg nie	0	1	2
23. Ongehoorsaam by die skool	0	1	2
24. Pla ander leerders	0	1	2
25. Kom nie oor die weg met ander kinders nie	0	1	2
26. Blyk dat sy/hy nie skuldig voel na wangedrag nie	0	1	2
27. Maklik jaloers	0	1	2
28. Breek skoolreëls	0	1	2
29. Vrees reaksie ten opsigte van bv diere, situaties of ander plekke, bo en behalwe die skool. ***Beskryf***	0	1	2
30. Bang om skool toe te gaan	0	1	2
31. Vrees dat hy/sy iets mag dink of doen wat sleg is	0	1	2
32. Voel hy/sy moet perfek wees	0	1	2
33. Kla/voel dat niemand vir hom/haar lief is nie	0	1	2
34. Voel ander wil hom/haar leed aandoen	0	1	2
35. Voel waardeloos of minderwaardig	0	1	2
36. Kry maklik seer, is ongeluksvoël	0	1	2
37. Gereeld in bakleiery betrokke	0	1	2
38. Word baie geterg	0	1	2

	Onwaar	Soms waar	Baie waar of meestal waar
39. Is maats met kinders wat dikwels in die moelikheid beland	0	1	2
40. Hoor geluide wat nie bestaan nie. ***Beskryf***	0	1	2
41. Impulsief; dink nie voor hy/sy iets doen nie	0	1	2
42. Geniet dit om alleen te wees	0	1	2
43. Vertel leunens of is oneerlik	0	1	2
44. Byt sy/haar naels	0	1	2
45. Senuweeagtig; oorgevoelig of gespanne	0	1	2
46. Senuweeagtige bewegins of trekkings. ***Beskryf***	0	1	2
47. Oorkonformeer met reëls	0	1	2
48. Ongewild by ander leerders	0	1	2
49. Sukkel om te leer	0	1	2
50. Te angstig of vreesagtig	0	1	2
51. Voel duiselig	0	1	2
52. Voel te skuldig	0	1	2
53. Praat uit beurt	0	1	2
54. Oormoeg	0	1	2
55. Oorgewig	0	1	2
56. Fiesieke probleme sonder bekende mediese oorsaak	0	1	2
a. Pyne	0	1	2
b. Hoofpyne	0	1	2
c. Naarheid, voel siek	0	1	2

	Onwaar	Soms waar	Baie waar of meestal waar
d. Oogprobleme. ***Beskryf***	0	1	2
e. Veluitslag of ander velprobleme	0	1	2
f. Maagpyne of maagkrampe	0	1	2
g. Braking	0	1	2
h. Ander. ***Beskryf***	0	1	2
57. Val mense fisiek aan	0	1	2
58. Krap in neus, vel of ander gedeeltes van die liggaam. ***Beskryf***	0	1	2
59. Slaap in die klas	0	1	2
60. Onverskillig of ongemotiveer	0	1	2
61. Swak skool vordering	0	1	2
62. Swak koordinasie, lomp	0	1	2
63. Verkies om met ouer kinders te speel	0	1	2
64. Verkies om met jonger kinders te speel.	0	1	2
65. Weier om te praat	0	1	2
66. Herhaal sekere handelinge/dade oor en oor; kompulsies. ***Beskryf***	0	1	2
67. Verbreek klas disipline	0	1	2
68. Gil baie	0	1	2
69. Geheimsinnig, hou baie vir haar/himself	0	1	2
70. Sien dinge wat nie daar is nie. ***Beskryf***	0	1	2
71. Selfbewus of maklik verleë	0	1	2
72. Slordige werk	0	1	2

	Onwaar	Soms waar	Baie waar of meestal waar
73. Tree onverandwoordelik op ***Beskryf***	0	1	2
74. Pronk, trek aandag of grapmaker	0	1	2
75. Te skaam of skugter/inkennig	0	1	2
76. Uitbarstings en onvoorspelbare gedrag	0	1	2
77. Eise moet onmiddelik bevredig word, maklik gefrustreerd	0	1	2
78. Onoplettend en maklik verward	0	1	2
79. Spraakprobleem. ***Beskryf***	0	1	2
80. Staar uitdrukkingloos	0	1	2
81. Voel seer wanneer hy/sy gekritiseer word	0	1	2
82. Steel	0	1	2
83. Gaar voorwerpe op wat hy/sy nie nodig het nie. ***Beskryf***	0	1	2
84. Eienaardige gedrag. ***Beskryf***	0	1	2
85. Eienaardige idees/gedagtes. ***Beskryf***	0	1	2
86. Hardkoppig, nors of geïrriteerd	0	1	2
87. Skielike veranderinge in gemoed of gevoelens	0	1	2
88. Gereeld nukkerig of dikmond	0	1	2

	Onwaar	Soms waar	Baie waar of meestal waar
89. Agterdogtig	0	1	2
90. Vloek en vuil taal	0	1	2
91. Praat oor hom-/haarself doodmaak	0	1	2
92. Onderpresteer, werk nie volgens potensiaal nie	0	1	2
93. Praat te veel	0	1	2
94. Terg baie/skeer baie die gek	0	1	2
95. Woedeuitbarstings of vinnige humeur	0	1	2
96. Dink te veel oor seks	0	1	2
97. Dreig mense	0	1	2
98. Onwillig vir skool of klas	0	1	2
99. Rook, kou of snuif tabak	0	1	2
100. Versuim om gegewe take uit te voer	0	1	2
101. Stokkiesdraai of wegbly van die skool af	0	1	2
102. Passief, traag of gebrekkige energie	0	1	2
103. Ongelukkig, treurig of terneergedruk	0	1	2
104. Ongewoon luidrigtig	0	1	2
105. Gebruik alkohol of dwelmmiddels. ***Beskryf***	0	1	2
106. Ooranstig om te behaag	0	1	2
107. Hou nie van skool nie	0	1	2
108. Is bang om foute te maak	0	1	2
109. Kerm	0	1	2

	Onwaar	Soms waar	Baie waar of meestal waar
110. Onversorgde persoonlike voorkoms	0	1	2
111. Teruggetrokke, raak nie by ander betrokke nie	0	1	2
112. Bekommerd	0	1	2
113. Skryf asseblief enige ander probleme neer wat die leerder het wat nie hier bo genoem is nie	0	1	2

Addendum F:

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STELLENBOSCH UNIVERSITY

CONSENT form for Parents

THIS FORM SHOULD BE COMPLETED BY THE PARENTS OR GUARDIANS OF CHILDREN AT SCHOOL 1

The Effect of an Animal-assisted Visitation Programme on the Behaviour of Children with Intellectual Disabilities : A Randomised Controlled Study

Your child has been invited to participate in a research study conducted by Khama Diergaardt for the completion of her master's degree in Psychology (thesis) at Stellenbosch University. Your child was selected as a possible participant in this study as your child is part of a population and age group which the researcher intends to study. Research in this field has indicated that an animal-assisted intervention will yield positive results with children within this age group who are suffering from intellectual disabilities.

1. **PURPOSE OF THE STUDY**

Research has indicated that children suffering from intellectual and physical disabilities will yield positive results. Research shows that children will have better verbal and non-verbal communication skills, reduced stress, better oriented and sensory movement, as well as reduced negative

behaviours. It is the purpose of this study to establish whether an animal-assisted intervention will have an effect on the behaviour of children with intellectual disabilities.

2. PROCEDURES

If your child volunteers to participate in this study, the following things will occur:

Before the intervention starts the teachers of all the learners will be asked to complete questionnaires regarding their observed behaviours. This includes asking questions regarding the name, age, allergies and gender of each learner. Once the intervention has been completed, the teachers will be asked to complete similar questionnaires again to establish if the intervention has changed any behaviours in the children. Following the first round of questionnaires, the following intervention will take place:

The learners will be expected to take part in an animal-assisted intervention during which they will be divided into two groups. Group one will receive interaction with dogs once a week for approximately one hour over ten weeks and group two will not receive any interaction with dogs.

During the interaction the children with each have an equal opportunity to interact with the dogs, petting, brushing, walking and giving the dog snacks. It is important to note that the dogs will at all times be attached to a leash with their handlers/owners. All the dogs are well trained, healthy and classified as safe to handle.

After the interaction has taken place the children will return to their normal daily activities. It is not the intention of the research to keep the children from their daily school work or other activities. The one hour during which the children will interact will be scheduled in such a way to cause the least disturbance to their daily schedules. The group of learners who will not receive interaction will go about their school activities as normal. After the intervention period (10 weeks) the programme will continue at the school, giving the group who received no interaction a chance to also have interaction with the dogs and their owners.

As the parent, you will not be expected to complete any questionnaires regarding your child.

3. POTENTIAL RISKS AND DISCOMFORTS

It is not the intention of the research to cause any discomforts or put your child at any risk. If during the intervention your child has any discomfort, fear or is uneasy with the process, he or she may leave the programme. The school has agreed for the child to make use of the psychologist and nurse on the premises if any discomfort arises. The parents are further reassured that the dogs will not harm the children as they are all well trained, easy to handle and used to working with children. The dogs are protected under public insurance and is from an organisation called Pets as Therapy (www.pat.org.za).

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

It is the aim of this study that the learners will benefit from it. However, the ways in which the learner may benefit can vary from learner to learner. Potential benefits include better or improved: social skills, communication, behaviour, movement, mood and reduced stress.

5. PAYMENT FOR PARTICIPATION

No payment or other mural benefit will be received for participating in the study.

6. CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of using a password-protected computer on which the data will be kept. Identifying information such as the name and the age of learner will only be used

by the researcher during the analysis of the data. No identifying information will be used while reporting the results.

If any information is released regarding the data or in future publications the researcher will convey confidentiality with regard to the name of the school used and no identifying information will be used which could identify your child. Confidentiality is discussed with all participating members in the research process to understand these terms and conditions.

7. PARTICIPATION AND WITHDRAWAL

You can choose whether your child should be in this study or not. If you volunteer on behalf of your child to be in this study, you may withdraw your child at any time without consequences of any kind. Your child may also refuse to answer any questions your child does not want to answer and still remain in the study. The investigator may withdraw your child from this research if circumstances arise which warrant doing so. If your child is experiencing discomfort before or during the research process he or she may withdraw from the study and the information gathered regarding them will be discarded from the study completely.

8. IDENTIFICATION OF INVESTIGATORS

For any further questions or concerns regarding the study, please do not hesitate to contact me (the researcher), Khama Diergaardt, at 072 227 5999 or on khamad.com@gmail.com or my research supervisor, Dr Marieanna le Roux at 021-808 3444 (work) or 021-886 6101 (home) or on mclr@sun.ac.za.

9. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development.

SIGNATURE OF RESEARCH SUBJECT OR LEGAL REPRESENTATIVE

The information above was described to me (the parent) by Khama Diergaardt/teacher of the school in English or Afrikaans and I am in command of this language or it was satisfactorily translated to me. I was given the opportunity to ask questions and these questions were answered to my satisfaction.

I hereby consent for the voluntarily participation of my child in this study. I have been given a copy of0020this form.

_____

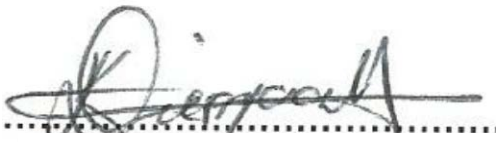
Name of Participant or learner

_____ _____ _____

Signature of Parent **Name of Parent** **Date**

SIGNATURE OF INVESTIGATOR

I declare that I explained the information given in this document to _____ (name of parent) and/or [his/her] representative _____ [*name of the representative]. [H*e/she] was encouraged and given ample time to ask me any questions. This conversation was conducted in [*Afrikaans/*English*] and [*no translator was used/this conversation was translated into* _____ by _____].



02/02/2015

Signature of Investigator Date

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UNIVERSITEIT STELLENBOSCH

Toestemming VIR OUERS

HIERDIE DOKUMENT MOET VOLOOI WORD DEUR DIE OUERS OF VOOG VAN KINDERS WAT TANS BY SKOOL 1 IS

The Effect of an Animal-assisted Visitation Programme on the Behaviour of Children with Intellectual Disabilities: A Randomised Controlled Study

U kind word uitgenooi om deel te neem aan 'n navorsingstudie. Khama Diergaardt onderneem hierdie studie as deel van haar meestersgraad tesis in Sielkunde aan die Universiteit Stellenbosch.U kind is geïdentifiseer as moontlike deelnemer aan die studie omdat hy/sy in die bepaalde ouderdomsgroep van die studie populasie val. Navorsing in hierdie veld dui aan dat troeteldier-ondersteunde intervensies positiewe resultate toon in intellektueel-gestremde kinders van die betrokke ouderdomsgroep.

1. DOEL VAN DIE STUDIE

Navorsing dui aan dat kinders wat intellektueel en fisies gestremd is positiewe resultate toon. Navorsing toon verder dat kinders oor beter verbale en nie-verbale kommunikasievaardighede, minder stres, beter geöriënteerde en sensoriese bewegings sal beskik. Hulle sal verder n afname in

negatiewe gedrag toon. Die studie poog om te bevestig dat ’n troeteldier-ondersteunde intervensie ’n effek sal hê op die gedrag van kinders met intellektuele gestremdhede.

2. PROSEDURES

Indien u toestemming gee dat u kind aan die studie mag deelneem , sal die volgende geskied:

Voor die intervensie begin, sal die onderwysers van al die kinders gevra word om ’n volledige vraelys te voltooiaangaande die kinders se gedrag. Dit sluit vrae oor die naam, ouderdom, allergieë en geslag van elke kind in. Sodra die intervensie voltooi is, sal die onderwysers weer gevra word om ’n soortgelyke vraelys te voltooi. Dit word gedoen om te bepaal of die intervensie verandering in enige gedrag van die kinders veroorsaak het. Na afloop van die eerste rondte vraelyste sal die volgende intervensie plaasvind:

Daar sal van die kinders verwag word om deel te neem aan ’n troeteldier-ondersteunde intervensie. Die kinders word vervolgens in twee groepe verdeel. Groep een sal vir ongeveer tien weke een keer per week interaksie met die diere ontvang. Groep twee sal geen interaksie met die diere ontvang nie.

Gedurende die interaksie sal die kinders elkeen gelyke geleenthede ontvang om met die diere te speel, hulle te borsel, met hulle te gaan stap en hulle peuselhappies te gee. Dit is belangrik om kennis te neem dat die diere ten alle tye aan ’n leiband sal wees. Die honde is goed geleer, geklasifiseer as maklik hanteerbaar, gewoond daaraan om met kinders te werk en is gesond.

Nadie interaksie sal die kinders met hul gewone daaglikse aktiwiteite voortgaan . Dit is nie die doel van die studie om die kinders van hulle daaglikse skool aktiwiteite af weg te hou nie. Die uur waartydens die kinders met die honde sal interak, is op so ’n manier geskeduleer dat dit die geringste steurnis ten opsigte van hul ander aktiwiteite sal veroorsaak. Die groep kinders wat nie die intervensie ontvang nie sal gewoon aangaan met hul daaglikse aktiwiteite by die skool. Na die intervensieperiode (10 weke) sal die program voortgaan by die skool. Dit sal die groep wat nie die interaksie ontvang het nie die kans gun om ook in interaksie met die honde en hul eienaars te tree.

Daar word nie van die kinders verwag om enige vraelyste te voltooi nie.

3. MOONTLIKE RISIKO'S EN ONGEMAK

Dit is nie in die doel van die huidige navorsing om enige ongemak te veroorsaak of u kind aan enige risiko bloot te stel nie. In geval van enige ongemak, vrees of risiko wat u kind ervaar, mag hy of sy van die program onttrek sonder enige gevolge. Die skool het reeds ingestem dat die deelnemers gebruik kan maak van die verpleegster en sielkundige by die skool indien enige ongemak opduik. Die ouers word verder verseker dat die honde nie u kind sal kwaad aandoen nie. Die honde is almal opgelei. Die honde is onder publieke versekering en form deel van die organisering Pets as Therapy (www.pat.org.za)

4. MOONTLIKE VOORDELE VIR PROEFPERSONE EN/OF VIR DIE SAMELEWING

Die studie se doel is om die kinders op 'n manier te bevoordeel . Nietemin sal die manier waarop die kind daaruit voordeel trek van kind tot kind verskil. Moontlike voordele sluit in die verbetering van sosiale vaardighede, kommunikasie, gedrag, beweging, gemoed (mood) en die verligting van stres.

5. VERGOEDING VIR DEELNAME

Geen vergoeding of ander materiële voordele sal verkry word deur aan die studie deel te neem nie.

6. VERTROULIKHEID

Enige inligting wat deur middel van die navorsing verkry word en wat met u kind in verband gebring kan word, sal vertroulik bly en slegs met u toestemming of soos deur die wet vereis bekend gemaak word. Vertroulikheid sal gehandhaaf word deur data op 'n wagwoord beskermde rekenaar te bewaar.

Enige identifiserende inligting soos naam en ouderdom van die kind sal slegs deur die navorser gebruik word tydens die analise van die data. Geen identifiserende inligting sal tydens die opskryf van die resultate gebruik word nie.

Indien enige inligting moontlik in die toekoms vrygestel sal word, sal die navorser die skool se naam vertroulik hanteer en geen identifiserende inligting oordra wat moontlik gebruik kan word om u kind te identifiseer nie. Vertroulikheid word met al die deelnemers aan die navorsingsproses bespreek sodat hulle die bepalings en voorwaardes kan verstaan.

7. DEELNAME EN ONTTREKKING

U kan self besluit of u kind aan hierdie studie moet deelneem of nie. Indien u namens u kind toestemming gee om aan die studie deel te neem, kan u enige tyd u kind onttrek sonder enige nadelige gevolge. Die navorser kan u kind uit die studie onttrek indien omstandighede dit noodsaak. Indien u kind enige ongemak voor of gedurende die navorsingsproses ondervind, mag hy of sy van die studie onttrek. Enige inligting wat van u kind verkry is, sal onmiddellik uitgegooi word.

8. IDENTIFIKASIE VAN ONDERSOEKERS

Indien u enige vrae of besorgdheid omtrent die navorsing het, staan dit u vry om in verbinding te tree met my (die navorser), Khama Diergaardt by 072 227 5999 of khamad.com@gmail.com, of my studieleier, dr. Marieanna le Roux by 021-808 3444 (werk) of 021-886 6101 (huis) of mclr@sun.ac.za in verbinding tree.

9. REGTE VAN PROEFPERSONE

U kan te enige tyd u toestemming terugtrek en u deelname beëindig sonder enige nadelige gevolge. Deur u kind te laat deel neem aan die navorsing doen u geensins afstand van enige wetlike regte, eise of regsmiddels nie. Indien u vrae het oor u regte as proefpersoon by navorsing, skakel met Me Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] van die Afdeling Navorsingsontwikkeling.

VERKLARING DEUR PROEFPERSOON OF SY/HAAR REGSVERTEENWOORDIGER

Die bostaande inligting is aan my (die ouer) weer gegee en verduidelik deur Khama Diergaardt/ Onderwyser by die skool in Engels of Afrikaans. Ek is die taal magtig of dit is bevredigend vir my vertaal. Ek (die ouer) is die geleentheid gebied om vrae te stel en my vrae is bevrediging beantwoord.

Ek gee hiermee my toestemming dat my kind aan hierdie studie deelneem. 'n Afskrif van hierdie vorm is aan my gegee.

_____

Naam van deelnemer/kind

_____

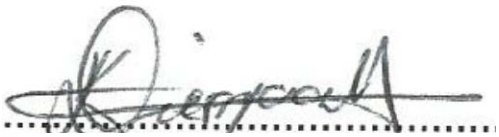
Naam van ouer

_____ _____

HANDTEKENING VAN OUER **DATUM**

VERKLARING DEUR ONDERSOEKER

Ek verklaar dat ek die inligting in hierdie dokument verduidelik het aan [*naam van die proefpersoon/deelnemer*] en/of sy/haar regsverteenwoordiger [*naam van die regsverteenwoordiger*]. Hy/sy is aangemoedig en genoeg tyd gegun om vrae aan my te stel. Dié gesprek is in [*Afrikaans/*Engels/*Xhosa/*Ander*] gevoer en [*geen vertaling is gebruik nie/die gesprek is in* _____ *vertaal deur* _____].



02/02/2015

Handtekening van ondersoeker Datum

Goedgekeur Subkomitee A 25 Oktober 2004

Addendum G:

Protocol for Dog handlers

Please consider the following protocols before entering the premises and starting the intervention. Kindly note that all information disclosed and noted during the intervention must be kept confidential at all times, as the intervention is for research purposes.

Kit for intervention:

Please bring along the following items for visitations:

- Brush
- Snack
- Two leashes
- Hand sanitizer or wet wipes
- Water and water bowl
- Clean up packet for excretion

1. Before entering the premises

- Ensure that pet and handler is not ill. If pet and owner is ill or feeling ill please refrain from entering the premises until better.
- If ill, please contact the researcher at least 24 hours prior to intervention time.
- Ensure that your dog has been attached to leash before entering the premises.
- Ensure that dog has secreted urine and faeces before starting the intervention. If dog has secreted any faeces on the premises please ensure that it has been cleaned.
- Dog has to wear PAT bandana before entering the premises.
- Handler must please also wear PAT clothing before entering the premises.
- PAT scarf and shirt must be kept on at all times whilst on the premises.
- Ensure that dog is properly groomed before entering the premises.

- Please ensure that you are at the premises on time, if for any reason you are late or will not be able to attend the visit, please inform the relevant authority.
- Upon arrival please report to the relevant liaison who will accompany you to the premises where the intervention takes place.

2. During the visitation

- Ensure that handler's and child's hands are clean at all times by making use of sanitizer or wet wipes.
- Ensure that all participants clean their hands before and after touching the dog.
- Allow equal spending time with dog for all the participants.
- Ensure that all the participants handle the dog with care and know how to touch the dog and where not to touch the dog.
- Be aware of dog's behaviour at all times, if dog becomes stressed, aggressive, tired or any other behavioural change is noted, terminate session immediately.
- Allow all participants to brush, groom, give snacks and if possible, walk the dog.
- If any distress is noticed with the participants inform the relevant authorities (researcher, teacher or staff member) immediately.
- Before allowing the dog to touch a participant ensure that the participant is comfortable with the dog.
- Do not allow participants to eat or drink in the presence of the dog.
- Do not allow any participant to enter any premises or area where the dog is not permitted, or without the handler.
- Report any scratches or biting by the dog immediately.
- Estimated visiting time will be one hour.

3. After the visit

- Inform the staff and researcher about the conclusion of the visit.

- Inform the participants that interaction time is finished and the intervention hour has been concluded.
- Ensure that everything used has been cleaned up and nothing is left behind.

For any further queries or details please do not hesitate to contact me (Khama Diergaardt) at khamad.com@gmail.com or 072 227 5999; or my supervisor (Dr. Marieanna le Roux) at mclr@sun.ac.za

Addendum H:

SCHOOL FOR LEARNERS WITH SPECIAL EDUCATIONAL NEEDS: Intellectual disability

Privaatsak/Private Bag X10, Kuilsrivier, 7579

Piet Fransmanstr, Kuilsrivier, 7580

Tel: 021 903 4178 / Faks: 021 903 6021 / Epos: [redacted]

2014-08-27

To Whom It May Concern

RE: Proposed research by Khama Diergaardt at School 1

We were approached by Ms Diergaardt, a student in Psychology, to assist in her research project for her Masters in Psychology. Her proposed topic is: The effect of an animal assisted visitation programme on children diagnosed with Intellectual Disabilities.

We as a school are familiar with the PAT (pets as therapy) programme. Volunteers from PAT have visited our school in the past and the benefits of the programme on our children were clearly evident. Ms Diergaardt's proposed topic therefore provides a unique opportunity for our school to be part of valuable research and we are eager to share the results.

We support her application to do the research at School 1. Our children will benefit from this experience and the programme. There are a few research studies done on children with intellectual disabilities but not in this field. Due to the fact that the normal cognitive therapies

are limited in prognoses with our children we feel that this research can broaden our knowledge base and inform our handling principals.

The teachers at School 1 are willing to participate in the research. I will be supervising the process at the school.

We feel privilege that she has chosen our school to be part of her research.

Kind regards

signed

[redacted]

Counselling Psychologist/Deputy Principal

PS 00091103

Addendum I:

Information sheet for school

The effect of an animal-assisted visitation programme on children with intellectual disabilities: A randomised controlled study

- Aim

The aim of this study is to evaluate the effect of an animal-assisted interaction programme on the behaviour of children with intellectual disabilities.

- Methodology (method the study will use)

The study will make use of a pretest-posttest control group design. This method essentially tests the children prior to the intervention, as well as after the intervention. The control group would be a group of children who are not included in the experimental group, who will have the interaction with the animals. Thus, two groups of children will be tested before the intervention as well as after. The control group will have access to Pets as Therapy's services after the intervention has taken place

- Time period for the intervention

The intervention will take place over a period of 10 weeks (one school term). The animals and their owners (Pets as Therapy volunteers) will come to the school once a week for one hour. The contact time for the learners and the animals will be approximately one hour per session.

- Total number of learners needed

The number of learners needed for the study will vary depending on the number of parents who will allow their children to take part in the intervention. Initially the researcher (Khama Diergaardt) would suggest that all parents who have children between the ages of 10 and 12 years old be asked for permission.

- Procedure in detail

The teachers of the participating learners will be asked to complete a questionnaire on each learner before the intervention with the dogs take place, as well as after the programme has been completed. We pass on PAT's assurance that all the dogs are well trained, clean and

healthy. The exact time and place of the intervention will be discussed with the school. This intervention aims to not interrupt any school work, activities or assessments.

Addendum J:

PAT Frequently Asked Questions (Retrieved from www.pat.org.za)

What is Pets as Therapy?

Pets as Therapy (PAT) was launched in South Africa in 2001. We are a registered Not for Profit Organisation (NPO), as well as a registered Public Benefit Organisation (PBO).

PAT organises therapeutic visits by pet owners who volunteer to take their pets (mainly dogs) to visit people in hospitals, hospices, retirement homes, frail care facilities, special needs schools residential centres, and a variety of other venues. PAT visits bring company, support, comfort, pleasure, stress relief and stimulation to those living either permanently or temporarily in these and other establishments.

There is a fortune of scientific evidence showing that the interaction between people and pets is therapeutic – physically, emotionally, psychologically and socially.

Why take animals to facilities?

Visiting with animals can help people feel less lonely, and less depressed. Visits from pets can provide a welcome change from routine, or the renewal of old friendships. People become more active and responsive both during and after visiting with animals.

An animal visit can offer entertainment or a welcome distraction from pain and infirmity. People often talk to the visiting pets, and share with them their thoughts and feelings and memories. Animal visits provide something to look forward to. Stroking a dog or cat can reduce a person's blood pressure, and petting encourages use of hands and arms, stretching and turning.

The visiting pet makes it easier for two strangers to talk. It gives people a common interest and provides a focus for conversation. Many people in hospitals or group homes have had to give up pet ownership and they miss the unconditional acceptance that a pet gives them. A dog pays little attention to age or physical ability, but accepts people just as they are. And the benefits continue long afterwards, leaving behind memories not only of the visit, but of past experiences. It offers something for people to share.

People talk about animal assisted activities (AAA) and animal assisted therapy(AAT). What's the difference?

Pets as Therapy is involved in animal assisted activities which is the less formal of the two. Neither the human volunteer nor the visiting pet need specialised training. The interaction

between animal and human is social and unstructured, but has therapeutic benefits - hence our name, “Pets as Therapy.”

Animal assisted therapy is more formal. It usually involves one particular animal and handler assigned to a particular set of clients. There tend to be particular goals on which the team need to focus.

How does PAT operate?

Most owners really love their pets and get so much pleasure from this relationship. Some feel that they want to share the joy and love of their animal companions with others. PAT’s role is to help facilitate this process. Sometimes, it’s really hard to phone an institution and say that you want to visit. There are also a whole range of issues that need to be considered such as:

- The suitability of the pet – its own temperament as well as the correct match between the pet and the clients. A docile elderly pooch will get overwhelmed in a children’s home, and yet would be of great comfort in a frail care unit;
- The health of the pet – it wouldn’t be appreciated if visiting pets caused a resident to get worms or started a flea epidemic! Nor would we want to stress any pet;
- The nature of the institution.
- So Pets as Therapy assesses you and your animal companion as a team. We match you with an institution where all will benefit. We support you to ensure that you feel confident on visits, and provide ongoing support to you.

Where do we currently visit?

More than 45 institutions in and around Cape Town are regularly visited including the Red Cross Children’s Hospital Rondebosch, Huis Lückhoff Retirement Village Rosebank, St Dominic’s School for the Deaf Tokai, Helen Keller Home for the Blind Pinelands, Alexandra Hospital and Includid Maitland, Huis Horizon Stellenbosch, to name just a few.

We frequently review our list of facilities and will contact many more in the near future.

How much time is required?

Any PAT interaction is better than none! As the impact of Pets as Therapy depends on frequency of contact, weekly visits would be ideal. Many of us lead busy lives and can only manage fortnightly or monthly visits. Some people walk through the institutions spending a few minutes with many people for about an hour. We don’t want to exhaust or stress the pets, so an hour is usually enough time for a visit. Others spend much more time with a few people and the pets develop really close relationships with their “clients.”

What is the process of joining?

Once volunteers have made contact, we assess the pet. Basically any animal that is not aggressive, not too excitable, friendly, and under the control of the owners will be accepted. We need proof that vaccinations are up to date, that there is a parasite (fleas and ticks) control programme in place, and that the animal is healthy. The next step is two or three mentorship visits with experienced visitors to get the "feel" of what it takes. Then we discuss the institutional vacancies and match up the volunteer team.

We arrange to introduce the new team to the institution, accompany them for a visit or two to gain confidence. The team is then left to visit according to the arrangement set up between the team and the institution. We provide ongoing support through regular meetings and there is a membership fee of R120 per year. This is used to contribute towards annual public liability insurance fees.

What about people without pets or who have unsuitable pets?

Running an organization takes a lot of time and effort, so we do need volunteers whom we call Friends of Pets as Therapy. They help with arranging events, recruiting, marketing, fund raising etc. So, Friends are welcome and necessary members of PAT.

Friends have all the rights to Pets as Therapy benefits which volunteers have, and can be elected to the executive.

What is regarded as an "unsuitable pet?"

Due to the nature of the activities and the potential stress on the pets, we do not assess dogs less than 18 months old. There is no upper age limit, but if an animal is showing signs of frailty, and the assessors feel that Pets as Therapy activities will be detrimental to his or her health, the pet will be deemed as being unsuitable. We cannot deem dogs that have been "guard-dog" trained as suitable; our public liability cover specifically excludes such animals.

Animals that are not current with their vaccinations, de-worming schedules and external parasite control are also regarded as unsuitable.

Are there other activities associated with Pets as Therapy?

Recruitment drives, gaining exposure and raising funds are all critical to the ongoing success of Pets as Therapy. We attend pet fairs, public events held by the SPCA, and have an annual book sale which raises the majority of our funds. We have informal links with animal welfare

organisations, dog clubs, and organisations involved in human–animal interactions. There are great opportunities to develop closer relationships with these organisations. Like all Not for Profit Organisations, we are very short of funding and so donations are always gratefully accepted and acknowledged.

What about ongoing support for members?

We hold several meetings a year to discuss organisational issues and talks about our experiences. More social get-togethers to support members are planned for the future, such as picnics along with our pets, and social suppers.

What about other pets?

Evidence shows all pets have therapeutic impacts. PAT currently has two very elegant Siamese cats who love their therapeutic roles as visitors. However, they can occasionally cause allergic problems, so some institutions don't favour them.

Australians and certain American branches are quite big on white rats…. We have had no experience with these, but are willing to give it a try as well as parrots, canaries, cockatiels, rabbits, miniature goats, miniature Shetland ponies, or pot-bellied pigs!

What else does PAT have to do?

We need to get the basics right – get our brand known, promote the concept to institutions and then recruit many more volunteers to visit. There are so many opportunities in Cape Town and the surrounding areas. There are also many relationships to build between organisations with overlapping interests. Once we have Cape Town working well, we would like to open branches in other cities and towns around South Africa. Stellenbosch and Polokwane are already up and running!

For any further Queries on PAT, please contact Bronwynn Douglas at Bronwynn@btinternet.com

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Marieanna le Roux
Chair & Coordinator Stellenbosch/Helderberg
021-8083444(w) 021-8866101(h)
mclr@sun.ac.za

Addendum K:

Naam van leerder:_____

Raai wie kom kuier

Hallo almal,

My naam is Juno en ek en my ma wil graag vir jou kom kuier!

Ek is nie ‘n gewone hond nie! Ek is ‘n spesiale opgeleide hond waarvoor jy nie bang hoef te wees nie. Ek is vriendelik, rustig en kalm en is gewoond om met kinders te werk. Ek is gewoond daaraan dat kinders aan my vat en my streel.

Mag ek maar vir jou kom kuier?

Ja

Nee

Guess who is coming to visit

Hi everyone,

My name is Juno and I really want to come visit you!

I am not a normal dog! I am a special dog that has been trained so you don‘t need to be scared to me. I’m friendly, quiet and calm and I am used to working with children. I am used to children that touch and rub me. May I come visit you?

Yes ☐

No ☐

Addendum L:

Dog and owner consent form

I…….. (Name of owner) herewith voluntarily consent for my dog a …….. (Breed of dog) with the name …….. (name of dog) to participate in the research of Khama Lucille Diergaardt to the fulfilment of her MA (thesis) degree at Stellenbosch University. The research in question is '*The effect of an animal-assisted intervention programme on children with intellectual disabilities: a randomised controlled study.'*

By signing this document I am stating that I understand the terms and protocols of this research as described to me by Ms. Diergaardt and further have been given the opportunity to ask questions and have them answered to my satisfaction. I further acknowledge the importance of the protocols of this research and will comply to the best of my abilities. I also acknowledge that the transportation of the dog will be done by myself and understand the risks associated with the transportation. In the case of anything happening to my dog, I will ensure that my dog will see his veterinarian and be treated accordingly as soon as possible.

_____

Name of the owner

_____ _____

Signature of owner Date

Ek……..(naam van eienaar) gee hiermee vrywillig my toestemming dat my hond ’n ……..(ras) met die naam……..(naam van hond) deel mag wees van die navorsing wat uitgevoer sal word deur Khama Lucille Diergaardt ter voltooiing van haar meestersgraad by Universiteit Stellenbosch. Die navoringstitel is ‘*The effect of an animal-assisted intervention programme on children with intellectual disabilities: A randomised controlled study’.*

Deur hierdie dokument te onderteken, erken ek dat ek die voorwaardes, bepalings en protokol ten volle verstaan soos beskryf deur me. Diergaardt en dat ek die geleentheid gehad het om vrae te vra. Ek erken verder dat ek die noodsaaklikheid van die protokolle aanvaar, daarvolgens sal optree na die beste van my vermoë. Ek erken dat die vervoer van my hond my eie verantwoordelikheid is en ek verstaan die risiko’s hieraan verbonde. Ingeval enigiets met my hond gebeur, sal ek hom of haar so gou moonlik na die naaste veearts neem vir die nodige behandeling.

…….

Naam van eienaar

…….

Handtekening van eienaar

……

Datum

Addendum M:

Directorate: Research

Audrey.wyngaard@westerncape.gov.za
tel: +27 021 467 9272
Fax: 0865902282
Private Bag x9114, Cape Town, 8000
wced.wcape.gov.za

REFERENCE: 20140911-36322
ENQUIRIES: Dr A T Wyngaard

Ms Khama Diergaardt
B10 Parkview Villas
Roger Street
Tygervalley
7530

Dear Ms Khama Diergaardt

RESEARCH PROPOSAL: THE EFFECT OF AN ANIMAL-ASSISTED VISITATION PROGRAMME ON CHILDREN WITH INTELLECTUAL DISABILITIES: A RANDOMIZED CONTROLLED STUDY

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Educators' programmes are not to be interrupted.
5. The Study is to be conducted from **01 April 2015 till 30 July 2015**
6. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
7. Should you wish to extend the period of your survey, please contact Dr A.T Wyngaard at the contact numbers above quoting the reference number?
8. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
9. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
10. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
11. The Department receives a copy of the completed report/dissertation/thesis addressed to:

    The Director: Research Services
    Western Cape Education Department
    Private Bag X9114
    CAPE TOWN
    8000

We wish you success in your research.

Kind regards.
Signed: Dr Audrey T Wyngaard

Addendum N:

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jou kennisvennoot • your knowledge partner

Approval Notice
Response to Modifications- (New Application)

12-Nov-2014
Diergaardt, Khama KL

Proposal #: HS1118/2014
Title: The effect of an animal-assisted visitation programme on children with intellectual disabilities: A randomised controlled study

Dear Miss Khama Diergaardt,

Your **Response to Modifications** - *(New Application)* received on **28-Oct-2014**, was reviewed by members of the **Research Ethics Committee: Human Research (Humanities)** via Expedited review procedures on **12-Nov-2014** and was approved.
Please note the following information about your approved research proposal:

Proposal Approval Period: **12-Nov-2014 -11-Nov-2015**

Please take note of the general Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

Please remember to use your **proposal number** (**HS1118/2014**) on any documents or correspondence with the REC concerning your research proposal.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

Also note that a progress report should be submitted to the Committee before the approval period has expired if a continuation is required. The Committee will then consider the continuation of the project for a further year (if necessary).

This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki and the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health). Annually a number of projects may be selected randomly for an external audit.

National Health Research Ethics Committee (NHREC) registration number REC-050411-032.

We wish you the best as you conduct your research.

If you have any questions or need further help, please contact the REC office at 218089183.

Included Documents:
Informed consent form_dog owners
Research proposal_appendix
Permission letter_school
DESC application
Information sheet_school
Assent form_AFR
Research proposal
Information sheet_PAT
REVISED_Response to modifications
Child behaviour checklist_AFR

Protocol for dog handlers
Demographic questionnaire
Measurement of Pet intervention
REVISED_Research proposal and appendices
Informed consent form_AFR
REVISED_Confirmation of insurance
Informed consent_eng
REC application form
Permission letter_PAT
Child behaviour checklist_ENG
WCED permission letter

Sincerely,

Clarissa Graham
REC Coordinator
Research Ethics Committee: Human Research (Humanities)

Investigator Responsibilities

Protection of Human Research Participants

Some of the general responsibilities investigators have when conducting research involving human participants are listed below:

1.Conducting the Research. You are responsible for making sure that the research is conducted according to the REC approved research protocol. You are also responsible for the actions of all your co-investigators and research staff involved with this research. You must also ensure that the research is conducted within the standards of your field of research.

2.Participant Enrollment. You may not recruit or enroll participants prior to the REC approval date or after the expiration date of REC approval. All recruitment materials for any form of media must be approved by the REC prior to their use. If you need to recruit more participants than was noted in your REC approval letter, you must submit an amendment requesting an increase in the number of participants.

3.Informed Consent. You are responsible for obtaining and documenting effective informed consent using **only** the REC-approved consent documents, and for ensuring that no human participants are involved in research prior to obtaining their informed consent. Please give all participants copies of the signed informed consent documents. Keep the originals in your secured research files for at least five (5) years.

4.Continuing Review. The REC must review and approve all REC-approved research proposals at intervals appropriate to the degree of risk but not less than once per year. There is **no grace period**. Prior to the date on which the REC approval of the research expires, **it is your responsibility to submit the continuing review report in a timely fashion to ensure a lapse in REC approval does not occur**. If REC approval of your research lapses, you must stop new participant enrollment, and contact the REC office immediately.

5.Amendments and Changes. If you wish to amend or change any aspect of your research (such as research design, interventions or procedures, number of participants, participant population, informed consent document, instruments, surveys or recruiting material), you must submit the amendment to the REC for review using the current Amendment Form. You **may not initiate** any amendments or changes to your research without first obtaining written REC review and approval. The **only exception** is when it is necessary to eliminate apparent immediate hazards to participants and the REC should be immediately informed of this necessity.

6.Adverse or Unanticipated Events. Any serious adverse events, participant complaints, and all unanticipated problems that involve risks to participants or others, as well as any research related injuries, occurring at this institution or at other performance sites must be reported to Malene Fouch within **five (5) days** of discovery of the incident. You must also report any instances of serious or continuing problems, or non-compliance with the RECs requirements for protecting human research participants. The only exception to this policy is that the death of a research participant must be reported in accordance with the Stellenbosch University Research Ethics Committee Standard Operating Procedures. All reportable events should be submitted to the REC using the Serious Adverse Event Report Form.

7.Research Record Keeping. You must keep the following research related records, at a minimum, in a secure location for a minimum of five years: the REC approved research proposal and all amendments; all informed consent documents; recruiting materials; continuing review reports; adverse or unanticipated events; and all correspondence from the REC

8.Provision of Counselling or emergency support. When a dedicated counsellor or psychologist provides support to a participant without prior REC review and approval, to the extent permitted by law, such activities will not be recognised as research nor the data used in support of research. Such cases should be indicated in the progress report or final report.

9.Final reports. When you have completed (no further participant enrollment, interactions, interventions or data analysis) or stopped work on your research, you must submit a Final Report to the REC.

10.On-Site Evaluations, Inspections, or Audits. If you are notified that your research will be reviewed or audited by the sponsor or any other external agency or any internal group, you must inform the REC immediately of the impending audit/evaluation.

Addendum O:

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Approved with Stipulations

Date: 30-Sep-2014

PI Name: Diergaardt, Khama K

Protocol #: SU-ACUM14-00041

Title: The effect of an animal-assisted intervention programme on children suffering with intellectual disabilities: A randomised controlled study

Dear Khama Diergaardt, the Initial Application submission was reviewed on 30-Sep-2014 by Research Ethics Committee: Animal Care and Use via committee review procedures and was approved on condition that the following stipulations are adhered to:

1. Section D, page 4: The signature section has not been completed.

2. Section E3, page 4: A copy of the permit should be submitted before the study may commence.

3. Section F1, page 5: This section has not been completed.

4. Section 7, page 7: The breed and age of the dogs that will be used should be specified. Proof of up-to-date vaccinations for all the dogs to be used should be submitted to the REC: ACU.

5. Section 12, page 9: In the last sentence of the second paragraph it is stated "... and do fall under insurance to protect the school as well as the owners and their dogs in case of any unforeseen circumstances". Is the child included under the "school" or not (counselling/medical treatment)?

6. Please provide the Committee with housing details as it is not clear whether these are purpose-kept dogs or whether they are also integrated into a family of their own.

7. Section 15: The researcher states that owners will monitor their own dogs. Please specify the criteria for things that the owners will look out for i.e. symptoms of distress or stress. This information should be indicated in section 15.

Applicants are reminded that they are expected to comply with accepted standards for the use of animals in research and teaching as reflected in the South African National Standards 10386: 2008. The SANS 10386: 2008 document is available on the Division for Research Developments website www.sun.ac.za/research.

As provided for in the Veterinary and Para-Veterinary Professions Act, 1982. It is the principal investigator's responsibility to ensure that all study participants are registered with or have been authorised by the South African Veterinary Council (SAVC) to perform the procedures on animals, or will be performing the procedures under the direct and continuous supervision of a SAVC-registered veterinary professional or SAVC-registered para-veterinary professional, who are acting within the scope of practice for their profession.

Please remember to use your protocol number, SU-ACUM14-00041 on any documents or correspondence with the REC: ACU concerning your research protocol.

If you have any questions or need further help, please contact the REC: ACU secretariat at WABEUKES@SUN.AC.ZA or .

Sincerely,

Winston Beukes

REC: ACU Secretariat

Research Ethics Committee: Animal Care and Use

Addendum P:

Above: Tammy and a participant

Above: Juno and a participant

Above: Volunteers and their dogs, from left: Lexy and owner, Bretchen, Gemma and owner, Jean, Zac and owner, Britta and Juno and owner, Nici.